POLSKA AKADEMIA NAUK
INSTYTUT ZOOLOGII

ANNALES ZOOLOGICI

Tom 38 Warszawa 15 IX 1984 Nr 14

Ryszard BIELAWSKI

Coccinellidae (*Coleoptera*) of Mongolia[1]

[With 2 Tables and 853 Text-figures]

Abstract. This is a revision of 86 species known to occur in the Peoples' Republic of Mongolia. The paper contains a synonymical catalogue with distributional data, a zoogeographical analysis, a key for the identification of Mongolian *Coccinellidae*, as well as detailed descriptions of species, supplemented by numerous illustrations of genitalic structures.

INTRODUCTION

For the long time, the *Coccinellidae* of Mongolia were studied insufficiently. In 1963, Dr. Z. KASZAB from the Natural History Museum in Budapest initiated a series of expeditions to Mongolia. These expeditions provided abundant material and made it possible to elaborate this area in detail.

The first data on the *Coccinellidae* of Mongolia were in a paper by MULSANT (1866) — he described only one species, *Harmonia axiridis*. CROTCH (1874) recorded three other species — *Oxynychus erythrocephalus*, *Chilocorus rubidus* and *Brumus octosignatus*. In 1879 WEISE reported the first species from the genus *Scymnus* KUGEL., namely *S. castanopterus* (= *S. interruptus*) and, unfortunately, since then the species has never again been collected in Mongolia. RYBAKOV (1889) recorded five other species. WEISE (1889) recorded three spe-

[1] Based partly on results of Mongolian Expeditions of the Institute of Zoology, Polish Academy of Sciences, Warszawa. Contribution No. 48.

http://rcin.org.pl

cies, one of which — *Coccinella septempunctata* was new to the fauna of Mongolia; in 1890, the same author recorded 5 species new to Mongolia and out of these *Oxynychus alexandrae* has not been reported ever since. The occurrence of the species has only been repeated after WEISE in KORSCHEFSKY's catalogue (1931) and in a paper by MADER (1955). FLEISCHER (1900) reported three species, HEYDEN (1909) recorded eight species, with five never found in Mongolia before. BAROVSKY (1909) described the first species from the genus *Lithophilus* FRÖL. — *L. kozlovi*; the second species from this genus was described in 1961 by BIELAWSKI. Papers by BAROVSKIJ (1922, 1926, 1928) introduced a number of new data on species from the genera *Exochomus* RDTB. and *Brumus* MULS., and *Aages prior* described there has never been recorded again. A paper by MUNSTER (1923) was the first that presented all the information on *Coccinellidae* of Mongolia available at the time; it contained 17 species including 9 that had never been reported from that area before. There were numerous papers with data on *Coccinellidae* of Mongolia, but they added no new data. DOBZHANSKY (1926) recorded two species new to the fauna of Mongolia. In KORSCHEFSKY's Catalogue (1931 and 1932) there were 18 species with Mongolia mentioned in their distribution. Later, only MADER (1935, 1955) reported two species new to Mongolia — *Spiladelpha barovskii* and *Pharoscymnus brunneosignatus*. On the whole, only 41 species were recorded in Mongolia from 1866 to 1963 when a great deal of new data began to appear.

The next stage of investigations on *Coccinellidae* of Mongolia started with the expeditions of Dr. Z. KASZAB; his six expeditions covered the whole of the country (KASZAB 1963, 1965a, 1965b, 1966, 1968a, 1968b) and the material of *Coccinellidae* was published in the papers of BIELAWSKI (1964, 1965, 1968a, 1968b, 1975). They contributed greatly to the studies on this group in Mongolia. 37 species new to the fauna of Mongolia were reported and 3 species new to science were described. Moreover, 8 additional species new to the fauna of Mongolia are added in the present paper.

Thus, the family *Coccinellidae* is now represented in the fauna of Mongolia by 86 species. Together with Japan, Mongolia may now be considered one of the best studied areas in Asia.

MATERIAL EXAMINED

The present paper is based mainly on the published material collected by Dr. Z. KASZAB (Budapest). The material collected by other expeditions has also been taken into consideration; it comes from: (1) Institute of Zoology, Polish Academy of Sciences, Warsaw — 1962 (coll. R. BIELAWSKI and B. PISARSKI), 1963 (B. BURAKOWSKI and H. SZELĘGIEWICZ), 1964 (W. BAZYLUK); (2) Moravian Museum, Brno — 1964 (O. STERBA); (3) National Museum, Prag — 1965 (J. DLABOLA); (4) Institute of Zoology, Academy of Sciences, Leningrad — 1967 (I. M. KERZHNER), 1968 (P. K. KOZLOV). Material collected in 1970–1973

http://rcin.org.pl

by Us. PEREGI (Budapest), as well as the *Coccinellidae* from the collection of E. REITTER, preserved in Natural History Museum, Budapest, were examined too.

The items given below include data on species new to the fauna of Mongolia, on new finds and finding-places of species recorded in Mongolia, but noted very seldom.

Lithophilus kozlovi BAR. Bayankhongor aimak, 7 km W of Bayankhongor, 12 Aug. 1973 – 1 specimen.

Coccidula reitteri DODGE. "Quell. d. Irbut, REITTER, Typus – female"; "Transbaikalien, REITTER" – male.

Stethorus punctillum WS. Töv aimak, Tola-Valley, 7 km E of Ulan Bator, 19 July 1971 – 2 specimens. New to the fauna of Mongolia.

Scymnus (Pullus) ferrugatus (MOLL.). Töv aimak, Ubulan, 50 km SE of Ulan-Bator, 9 June 1962 – 120 specimens. New to the fauna of Mongolia.

Scymnus (Pullus) mongolicus WS. "Mongolia bor., REITTER, Paratypus" – 1 specimen.

Scymnus (Pullus) urgensis JACOBS. Töv aimak, Tola-Valley, 19 June 1972 – 1 specimen; "Mongolia bor., *Scymnus (Pullus) mongolicus* sp. n., Typus, coll. REITTER" – male.

Scymnus (Sidis) obsoletus KUGEL. Ömnögov aimak, 30 km SSE of Sudzhiinkhuk, 3 Aug. 1967 – 1 specimen; Bayankhongor aimak, Ikh-Bogdo, 18 Aug. 1967 – 3 specimens.

Scymnus (S.) abietis PAYK. Töv aimak, Bogdo-ul, 14 July 1967 – 1 specimen.

Scymnus (S.) frontalis (F.) Sukhe Bator, 5 Aug. 1963 – 3 specimens.

Scymnus (Nephus) spilotus WS. Zunkhara, 8 Aug. 1963 – 2 specimens; Övörkhangay aimak, Arc-Bogdo, 13 July 1967 – 2 specimens; Bulgan aimak. 20 km WSW of Ardzagi, 2 Sept. 1967 – 1 specimen.

Scymnus (Nephus) incinctus MULS. Bayankhongor aimak, N of the lake Orog-nur, 16 Aug. 1967 – 1 specimen.

Scymnus (Nephus) bipunctatus KUGEL. Töv aimak, Ubulan, 50 km SE of Ulan-Bator, 9 June 1962 – 1 specimen; Khovd aimak, NE of Ikh-Khavtgiyn-Nuru, 9 July 1968 – 3 specimens.

Scymnus (Nephus) changajensis BIEL. Bayankhongor aimak, 25 km WSW of Dalangin-Udzhur-daba, 26 Aug. 1967 – 1 specimen; Töv aimak, 30 km N of Erdene-Khudukh, 21 July 1967 – 2 specimens.

Hyperaspis asiatica LEW. Sukhe Bator, 6 Aug. 1963 – 3 specimens; Zunhara, 8 Aug. 1963 – 2 specimens. New to the fauna of Mongolia.

Hyperaspis leechi MIYAT. Övörkhangay aimak, Arc-Bogdo, 12–13 Aug. 1967 – 1 specimen. First record in Mongolia.

Oxynychus erythrocephalus (F.) Khovd aimak, 10 km N of Uench-somon, 3 Aug. 1968 – 3 specimens.

Pharoscymnus brunneosignatus MAD. Ömnögov aimak, Bordeon-Gobi, 8 Aug. 1967 – 1 specimen.

Chilocorus renipustulatus (SCRIBA). Zunkhara, 3 Aug. 1963 – 2 specimens; Arkhangay aimak, 10 km NW of Cecerleg, 31 Aug. 1967 – 1 specimen.

Exochomus semenovi WS. "Mongolia, coll. REITTER, Paratypus" – 2 specimens.

Exochomus mongol BAR. Sukhe Bator, 6 Aug. 1963 – 4 specimens; Selbe Gol Valley, 15 Aug. 1963 – 1 specimen; Övörkhangay aimak, Baga-Bogdo, 14 Aug. 1967 – 1 specimen.

Exochomus quadripustulatus (L.) "Nordl. Mongolei, Changai, coll. REITTER" – 2 specimens. New to the fauna of Mongolia.

Exochomus nigromaculatus (GOEZE). Khovd aimak, Ikh-Khavtgiym-Nuru, 9 Aug. 1968 – 1 specimen. First record in Mongolia.

Exochomus kiritshenkoi BAR. Dundgov aimak (Mts.), Delger-Khangay-ula, 25 July 1967 – 1 specimen. New to the fauna of Mongolia.

Brumus jacobsoni BAR. Ömnögov aimak, Bordzon-Gobi, 8 Aug. 1967 – 1 specimen.

http://rcin.org.pl

Brumus mongolicus FLEISCH. "Nordl. Mongolei, Changaj, coll. REITTER, Monotypus" — 1 specimen.; Sukhe Bator, 5 Aug. 1963 — 1 specimen.

Hippodamia tredecimpunctata (L.). 40 km S of Choir, 26 July 1963 — 2 specimens; 40 km N of Dalan-Zhargalan, 26 July 1963 — 1 specimen.

Hippodamia septemmaculata (DEG.). Uvs aimak, 50 km E of Ulangom, 11 July 1968 — 1 specimen; Arkhangay aimak, 15 km of Chulut, 29 Aug. 1967 — 1 specimen.

Tytthaspis lateralis FLEISCH. "Nordl. Mongolei, Changai, coll. REITTER, Holotypus. — *Micraspis 16-punctata* v. *lateralis* FLEISCHNER".

Tytthaspis trilineata WS. Arkhangay aimak, 5 km N of Cecerleg, 1800–2000 m above sea level, 10 Sept. 1964 — 1 specimen.

Bulaea lichatschovi (HUM.). Dornogov aimak, Malgyn-ul Mts., S of Sayn-Shand, 23 July 1963 — 1 specimen.

Adalia conglomerata (L.). Ulan-Bator, 26 June 1965 — 1 specimen.

Adalia bipunctata (L.). Ulan-Bator, 26 June 1965 — 1 specimen.

Adalia frigida (SCHN.). Zaisan near Ulan-Bator, 20 May 1962 — 1 specimen; Gorkhi, 50 km NE of Ulan-Bator, 24 May 1962 — 1 specimen; Erdene, 83 km E of Ulan-Bator, 8 June 1962 — 1 specimen; Ubulan, 50 km SE of Ulan-Bator, 9 June 1962 — 1 specimen.

Coccinella septempunctata L. Sukhe Bator, 6 Aug. 1963 — 1 specimen.

Coccinella withi MULS. Gorkhi, 50 km NE of Ulan-Bator, 25 June 1962 — 2 specimens; Yargait near Erdene, 1700 m a.s.l., 8 June 1962 — 9 specimens; Khabsukul, 17 Aug. 1965 — 2 specimens; Khovd aimak, 40 km N of Uench, 1 Aug. 1968 — 1 specimen.

Coccinella transversoguttata FALD. Sukhe Bator, 5 Aug. 1963 — 2 specimens.

Coccinella quinquepunctata L. Bulgan aimak, 7 km NW of Khanzhargalant, 1350 m a.s.l., 16 June 1968 (No. 967) — 1 specimen.

Coccinella hieroglyphica mannerheimi MULS. Gorkhi, 50 km NE of Ulan Bator, 9 Aug. 1963 — 1 specimen; Selbe Gol valley, 15 Aug. 1963 — 1 specimen; Arkhangay aimak, 35 km WSW of Ikh-Tamir, 29 Aug. 1967 — 2 specimens; Khovd aimak, NE of Ikh-Khavtgiyn-Nuru, 9 Aug. 1968 — 1 specimen.

Coccinella trifasciata L. Arkhangay aimak, 30 km W of Cecerleg, 29 July 1971 — 1 specimen.

Coccinella undecimpunctata L. Ömnögov aimak, Bordeon-Gobi, 8 Aug. 1967 — 1 specimen.

Synharmonia conglobata conglobata (L.). Songino, 24 km SW of Ulan-Bator, 22 May 1962 — 1 specimen.

Calvia duodecimmaculata (GELB.). Arkhangay aimak, 25 km WSW of Ikh-Tamir, 30 Aug. 1967 — 1 specimen.

Calvia decemguttata (L.). "Mong. bor., Unt, 11 Aug. 1965" 1 specimen. First record in Mongolia.

Anatis ocellata (L.). Sukhe Bator aimak, 120 km NNW of Barum Urt, 11–18 Aug. 1972 — 1 specimen.

Thea vigintiduopunctata (L.). Uvs aimak, Lake Uvs nuur, 24 Sept. 1964 — 1 specimen.

THE CATALOGUE OF MONGOLIAN *COCCINELLIDAE*

The data on distribution of particular species are presented in Table 1; the aimaks are given in the direction from the west to the east.

http://rcin.org.pl

Epilachninae

Subcoccinella Huber, 1841

vigintiquatuorpunctata (Linnaeus, 1758)

Subcoccinella vigintiquatuorpunctata: Bielawski 1965, 1968a, 1975.

General distribution: Northern Africa, Europe, Caucasus, Asia Minor, Siberia, Mongolia.

Lithophilinae

Lithophilus Fröhlich, 1793

Syn.: *Tetrabrachys* Kapur, 1948

kozlovi Barovskij, 1909

Lithophilus kozlovi Barovskij, 1909.
Lithophilus kozlovi: Korschefsky 1931, Bielawski 1964, 1975.
Tetrabrachys kozlovi: Kapur 1948, Mader 1955.

General distribution: Mongolia, China (Gobi).

kiritshenkoi (Bielawski, 1961)

Tetrabrachys kiritshenkoi Bielawski, 1961.
Lithophilus kiritshenkoi: Bielawski 1964, 1965, 1975.

General distribution: Mongolia.

Coccinellinae

Coccidula Gyllenhal, 1827

reitteri Dodge, 1938

Coccidula suturalis Reitter, 1897.
Coccidula suturalis: Munster 1923.
Coccidula reitteri Dodge, 1938.

General distribution: Eastern Siberia, Mongolia.

rufa (Herbst, 1783)

Coccidula rufa: Bielawski 1968a.

General distribution: Europe, Siberia, Mongolia.

http://rcin.org.pl

Table 1. Distribution of species in Mongolia according to aimaks

	Species	Northern aimaks							Central aimaks			Southern aimaks								
		Uvs	Zavkhan	Khövsgöl	Bulgan	Sukhbaatar Khot	Khentiy	Choybalsan	Arkhangay	Övörkhangay	Töv	Bayan-ölgiy	Khovd	Gov-altai	Bayankhongor	Ömnögöv	Dundgöv	Dornögov	Sukhbaatar	No precise data
		3	4	7	13	15	16	17	8	9	14	1	2	5	6	10	11	12	18	X
1	*Subcoccinella vigintiquatuor-punctata* (L.)	–	–	–	–	–	–	+	–	–	+	–	–	–	–	–	–	–	–	
2	*Lithophilus kozlovi* BAR.	+	–	–	–	–	–	–	–	–	–	+	–	–	+	–	–	+	–	
3	*Lithophilus kiritshenkoi* (BIEL.)	–	–	–	–	–	–	–	–	–	–	–	–	–	+	+	+	+	–	
4	*Coccidula reitteri* DODGE	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	+
5	*Coccidula rufa* (HBST.)	–	–	–	–	–	+	–	–	–	–	–	–	–	–	–	–	–	–	
6	*Stethorus punctillum* WS.	–	–	–	–	–	–	–	–	–	+	–	–	–	–	–	–	–	–	
7	*Scymnus* (*P.*) *ferrugatus* (MOLL.)	–	–	–	–	–	–	–	–	–	+	–	–	–	–	–	–	–	–	
8	*Scymnus* (*P.*) *mongolicus* WS.	–	–	–	–	–	–	–	–	–	–	–	+	–	+	+	–	–	–	
9	*Scymnus* (*P.*) *suturalis* THNBG.	–	–	–	–	–	–	–	–	–	+	–	–	–	–	–	–	–	–	
10	*Scymnus* (*P.*) *urgensis* JACOBS.	–	–	–	+	–	–	–	–	–	+	–	–	–	–	–	–	–	–	
11	*Scymnus* (*S.*) *obsoletus* WS.	–	–	–	–	–	–	–	–	–	–	–	–	+	+	+	–	–	–	
12	*Scymnus* (s. str.) *nigrinus* KUGEL.	–	–	–	–	–	–	–	+	–	–	–	–	–	–	–	–	–	–	
13	*Scymnus* (s. str.) *abietis* PAYK.	–	–	–	–	–	–	–	–	–	+	–	–	–	–	–	–	–	–	
14	*Scymnus* (s. str.) *manipulus* FÜR. et KR.	+	–	–	–	–	–	–	–	–	–	–	+	–	–	–	–	–	+	
15	*Scymnus* (s. str.) *frontalis* (F.)	–	–	–	+	+	+	–	–	–	+	–	–	–	–	+	–	–	–	
16	*Scymnus* (s. str.) *bogdoensis* BIEL.	–	–	–	–	–	–	–	–	+	+	–	–	–	–	–	–	–	–	
17	*Scymnus* (s. str.) *doriai* CAPRA	–	–	–	–	–	+	–	–	–	+	–	–	–	–	–	–	–	–	

http://rcin.org.pl

18	*Scymnus* (s. str.) *inderihensis* MULS.	+	−	+	+	−	+	−	−	+	+	−	−	−	−	−	+	+	+	
19	*Scymnus* (s. str.) *jakowlewi* WS.	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	
20	*Scymnus* (s. str.) *interruptus* (GOEZE)	−	−	+	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+
21	*Scymnus* (s. str.) *kaszabi* BIEL.	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	−	
22	*Scymnus* (*N.*) *spilotus* WS	−	−	+	+	−	+	−	−	+	+	−	−	−	−	−	+	−	−	
23	*Scymnus* (*N.*) *incinctus* MULS.	−	−	−	−	−	−	−	−	−	+	−	−	−	+	−	−	−	−	
24	*Scymnus* (*N.*) *bipunctatus* KUGEL.	−	−	+	−	+	−	−	−	−	−	−	+	−	−	−	−	−	−	
25	*Scymnus* (*N.*) *changajensis* BIEL.	−	−	−	−	−	−	−	−	+	+	−	−	−	+	−	+	−	−	
26	*Hyperaspis asiatica* LEWIS	−	−	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	
27	*Hyperaspis leechi* MIYAT.	−	−	−	−	−	−	−	−	+	−	−	−	−	−	−	−	−	−	
28	*Oxynychus erythrocephalus* (F.)	−	−	+	−	−	+	+	+	+	+	−	+	−	−	−	−	−	+	
29	*Oxynychus alexandrae* WS.	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+
30	*Pharoscymnus brunneosignatus* MAD.	−	−	−	−	−	−	−	−	−	−	−	−	−	+	+	−	−	−	
31	*Chilocorus rubidus* HOPE	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+
32	*Chilocorus renipustulatus* (SCRIBA)	−	−	−	+	−	−	−	+	−	+	−	−	−	−	−	−	−	−	
33	*Chilocorus geminus* ZASL.	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	−	−	
34	*Chilocorus bipustulatus* (L.)	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+
35	*Exochomus semenowi* WS.	−	−	−	−	−	−	−	−	−	−	−	+	−	−	−	−	−	−	
36	*Exochomus mongol* BAR.	−	−	−	+	+	+	−	−	+	+	−	−	−	−	−	−	−	+	
37	*Exochomus quadripustulatus* (L.)	−	−	−	−	−	−	−	+	−	−	−	−	−	−	−	−	−	−	
38	*Exochomus nigromaculatus* (GOEZE)	−	−	−	−	−	−	−	−	−	−	−	+	−	−	−	−	−	−	
39	*Exochomus kiritshenkoi* BAR.	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	
40	*Brumus jacobsoni* BAR.	−	−	−	−	−	−	−	−	−	−	−	−	−	+	+	−	−	−	
41	*Brumus octosignatus* (GEBL.)	−	−	−	−	−	−	−	−	−	−	+	−	+	+	−	−	−	−	
42	*Brumus mongolicus* FLEISCH.	−	−	−	−	+	−	−	−	−	+	−	−	−	−	−	−	−	−	
43	*Anisosticta sibirica* BIEL.	−	−	−	−	−	+	+	−	−	−	−	−	−	−	−	−	−	−	
44	*Anisosticta strigata* (THUBG.)	−	−	−	−	−	−	−	+	−	−	−	−	−	−	−	−	−	−	
45	*Anisosticta terminassianae* BIEL.	−	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	
46	*Hippodamia tredecimpunctata* (L.)	−	−	−	−	−	−	−	−	−	+	−	−	−	−	−	+	−	−	

http://rcin.org.pl

Table 1, contin.

		3	4	7	13	15	16	17	8	9	14	1	2	5	6	10	11	12	18	X
47	*Hippodamia septemmaculata* (Deg.)	+	–	–	+	–	–	–	+	–	+	–	–	–	–	–	–	–	–	
48	*Adonia variegata* (Goeze)	–	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	
49	*Adonia amoena* (Fald.)	+	–	+	+	–	+	+	+	+	+	+	–	–	–	–	–	–	+	
50	*Semiadalia notata* (Laich.)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	+
51	*Spiladelpha barovskii* Sem. et Dobzh.	–	–	–	–	–	–	–	–	–	–	+	+	–	–	–	–	–	–	
52	*Aeges prior* Bar.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
53	*Tytthaspis lateralis* Fleisch.	–	–	–	+	–	–	+	–	–	–	–	–	–	–	–	–	+	–	
54	*Tytthaspis trilineata* Ws.	–	–	+	+	–	–	–	+	+	+	–	–	+	–	–	–	–	–	
55	*Bulaela lichatschovi* (Humm.)	–	–	–	–	–	–	–	–	–	–	–	+	+	+	–	–	+	–	
56	*Adalia conglomerata* (L.)	–	–	–	–	–	–	–	–	–	+	–	–	–	–	–	–	–	–	
57	*Adalia decempunctata* (L.)	–	–	–	–	–	–	–	–	–	+	–	–	–	–	–	–	–	–	
58	*Adalia bipunctata* (L.)	+	–	+	+	–	–	–	–	–	+	+	–	–	–	–	–	–	–	
59	*Adalia fasciatopunctata* (Fald.)	–	–	+	+	–	+	–	–	–	+	+	+	–	–	–	+	–	–	
60	*Adalia frigida* (Schnd.)	–	–	–	–	–	–	–	–	–	+	–	–	–	–	–	–	–	–	
61	*Coccinella septempunctata* L.	+	–	–	–	+	+	+	–	+	+	+	+	+	+	+	+	+	+	
62	*Coccinella withi* Muls.	–	–	+	–	–	–	–	–	–	+	–	+	–	–	–	–	–	–	
63	*Coccinella transversoguttata* Fald.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
64	*Coccinella tianshanica* Dobzh.	+	–	–	–	–	–	–	–	+	–	+	–	–	+	+	–	–	–	
65	*Coccinella quinquepunctata* L.	–	–	–	+	–	–	–	–	–	–	–	–	–	–	–	–	–	–	+
66	*Coccinella hieroglyphica mannerheimi* Muls.	–	–	–	+	–	–	+	+	–	+	–	–	–	–	–	–	–	–	
67	*Coccinella trifasciata* L.	–	–	+	+	–	–	+	+	–	+	–	–	–	–	–	–	–	–	
68	*Coccinella divaricata* Ol.	–	–	+	+	–	–	+	–	–	+	+	–	–	–	–	–	–	+	
69	*Coccinella undecimpunctata* L.	+	–	+	+	–	–	–	–	–	+	+	+	+	+	+	–	+	–	
70	*Coccinula quatuordecimpustulata sinensis* (Ws.)	–	–	+	+	–	+	+	–	–	+	–	–	–	+	+	–	+	–	
71	*Coccinula elegantula* (Ws.)	–	–	–	–	–	–	–	–	–	–	–	+	+	+	+	–	–	–	
72	*Harmonia axyridis* (Pall.)	–	–	+	+	–	–	–	+	–	+	+	–	–	–	–	+	–	–	

http://rcin.org.pl

73	*Synharmonia conglobata conglobata* (L.)	–	–	–	–	–	–	–	–	–	+	–	–	–	–	–	–	–	–	
73′	*Synharmonia conglobata buphthalmus* (MULS.)	–	–	–	–	–	–	–	–	–	–	–	–	–	+	–	–	–	–	
74	*Synharmonia oncina* (OL.)	–	–	–	–	–	–	–	–	–	–	–	+	–	+	–	–	–	–	
75	*Myrrha octodecimguttata* (L.)	–	–	–	–	–	–	–	–	–	+	–	–	–	–	–	–	–	–	
76	*Calvia duodecimmaculata* (GEBL.)	–	–	–	+	–	–	–	+	–	–	–	–	–	–	–	–	–	–	
77	*Calvia decemguttata* (L.)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	+
78	*Calvia quindecimguttata* (F.)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	+
79	*Calvia quatuordecimguttata* (L.)	–	–	–	+	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
80	*Propylaea quatuordecimpunctata* (L.)	–	–	–	–	–	–	+	–	–	+	–	+	–	–	–	–	–	–	
81	*Neomysia oblongoguttata* (L.)	–	–	–	–	–	–	–	–	–	+	–	–	–	–	–	–	–	–	
82	*Neomysia ramosa* (FALD.)	–	–	+	–	–	–	–	–	–	+	–	–	–	–	–	–	–	–	
83	*Anatis ocellata* (L.)	+	–	+	–	–	–	–	–	–	+	–	–	–	–	–	–	–	+	
84	*Halyzia sedecimguttata* (L.)	–	–	–	+	–	–	–	–	–	+	–	–	–	–	–	–	–	–	
85	*Vibidia duodecimguttata* (PODA)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	+
86	*Thea vigintiduopunctata* (L.)	–	–	–	–	–	–	+	–	–	+	–	–	–	–	–	–	–	–	

http://rcin.org.pl

Stethorus WEISE, 1885

punctillum WEISE, 1891

General distribution: occurs over the most part of the Palaearctic.

Scymnus KUGELANN, 1794

Subgen.: *Pullus* MULSANT, 1846

ferrugatus (MOLL, 1785)

General distribution: Europe, Asia, Mongolia.

mongolicus WEISE, 1890

Scymnus (*Pullus*) *mongolicus* WEISE, 1890.
Pullus mongolicus: JACOBSON 1916.
Scymnus mongolicus: WINKLER 1927.
Scymnus (*Pullus*) *mongolicus*: KORSCHEFSKY 1931, Mader 1955, BIELAWSKI 1968a, 1975.

General distribution: Mongolia.

suturalis THUNBERG, 1795

Scymnus (*Pullus*) *suturalis*: BIELAWSKI 1968a.

General distribution: Europe, Tunisia, Caucasus, Siberia, Mongolia.

urgensis (JACOBSON, 1916)

Scymnus (*Pullus*) *mongolicus* FLEISCHER, 1900.
Scymnus (*Pullus*) *dorsalis* FLEISCHER, 1900.
Pullus urgensis JACOBSON, 1916.
Scymnus urgensis: WINKLER 1927.
Scymnus arenarius WEISE, 1929.
Scymnus dorsalis: WEISE, 1929.
Scymnus (*Pullus*) *urgensis*: KORSCHEFSKY 1931, MADER 1955, BIELAWSKI 1968a, 1968b, 1975.

General distribution: Mongolia.

Subgen.: *Sidis* MULSANT, 1850

obsoletus WEISE, 1890

Scymnus (*Sidis*) *obsoletus*: BIELAWSKI 1968b.

General distribution: Tibet, Mongolia.

http://rcin.org.pl

Subgen.: *Scymnus* s. str.

nigrinus KUGELANN, 1794

Scymnus (Scymnus) nigrinus: BIELAWSKI 1968b.

General distribution: Europe, Mongolia.

abietis PAYKULL, 1798

Scymnus (Scymnus) abietis: BIELAWSKI 1968b, 1975.

General distribution: Europe, Mongolia.

manipulus FÜRSCH et KREISSL, 1967

Scymnus (Scymnus) inderihensis: BIELAWSKI 1968a.
Scymnus (Scymnus) rufipes: BIELAWSKI 1968b.
Scymnus (Scymnus) manipulus: BIELAWSKI 1975.

General distribution: Caucasus, Soviet Central Asia, Mongolia, China (Kansu).

frontalis (FABRICIUS, 1798)

Scymnus frontalis: WEISE 1890.
Scymnus (Scymnus) frontalis: BIELAWSKI 1965, 1968a, 1975.

General distribution: Europe, Asia.

bogdoensis BIELAWSKI, 1965

Scymnus (Scymnus) bogdoensis Bielawski, 1965.

General distribution: Mongolia.

doriai CAPRA, 1924

Scymnus (Scymnus) doriai: BIELAWSKI 1968a.
Scymnus (Scymnus) bogdoensis: BIELAWSKI 1968b.
Scymnus (Scymnus) doriai: BIELAWSKI 1975.

General distribution: Italy, Austria, Yugoslavia, Bulgaria, Mongolia.

inderihensis MULSANT, 1850

Scymnus (Scymnus) quadrivulneratus: BIELAWSKI 1964, 1965, 1968a, 1968b.
Scymnus (Scymnus) inderihensis: BIELAWSKI 1975.

General distribution: Asia Minor, Soviet Central Asia, Southern Siberia, Mongolia.

jakowlewi WEISE, 1892

Scymnus (Scymnus) jakowlewi: BIELAWSKI 1975.

General distribution: Southern Siberia, Mongolia.

http://rcin.org.pl

interruptus (Goeze, 1777)

Scymnus (Sidis) castanopterus: Weise 1879.

General distribution: Palaearctic.

kaszabi Bielawski, 1975

Scymnus (Scymnus) kaszabi Bielawski, 1975.

General distribution: Mongolia.

Subgen.: *Nephus* Mulsant, 1846

spilotus Weise, 1900

Scymnus (Nephus) spilotus: Bielawski 1968a.

General distribution: Southern Siberia, Mongolia.

incinctus Mulsant, 1850

Scymnus (Nephus) incinctus: Bielawski 1964, 1975.

General distribution: Eastern Siberia, Mongolia.

bipunctatus Kugelann, 1794

Scymnus (Nephus) bipunctatus: Bielawski 1975.

General distribution: Europe, Afghanistan, Mongolia.

changajensis Bielawski, 1965

Scymnus (Nephus) changajensis Bielawski, 1965.
Scymnus (Nephus) changajensis: Bielawski 1975.

General distribution: Mongolia.

Hyperaspis Redtenbacher, 1843

asiatica Lewis, 1896

General distribution: Japan, Korean Peninsula, Southeastern Siberia, Mongolia.

leechi Miyatake, 1961

General distribution: Korean Peninsula, Southeastern Siberia, Mongolia, China.

http://rcin.org.pl

Oxynychus J. Leconte, 1850

erythrocephalus (Fabricius, 1787)

Hyperaspis caucasica: Crotch 1874.
Hyperaspis sexpustulatus: Geminger et Harold 1876.
Oxynychus erythrocephalus: Munster 1923, Bielawski 1964, 1965, 1968a, 1968b, 1975.

General distribution: Southern Europe, Ukraine, Caucasus, Mongolia, Northern Korean Peninsula.

alexandrae Weise, 1890

Oxynychus alexandrae: Korschefsky 1931, Mader 1955.

General distribution: Soviet Central Asia, Afghanistan, Mongolia.

Pharoscymnus Bedel, 1906

brunneosignatus Mader, 1949

Pharoscymnus brunneosignatus Mader, 1949.
Pharoscymnus brunneosignatus: Mader 1955, Bielawski 1975.

General distribution: Mongolia, China (Gobi Desert).

Chilocorus Leach, 1814

rubidus Hope, 1831

Chilocorus tristis: Crotch 1874.
Chilocorus rubidus: Gemminger et Harold 1876, Korschefsky 1932, Mader 1955, Kamiya 1959.

General distribution: Mongolia, Southern Siberia, Japan, China, Nepal, India, Celebes, Australia.

renipustulatus (Scriba, 1790)

Chilocorus renipustulatus: Bielawski 1975.

General distribution: Palaearctic.

geminus Zaslavskij, 1962

Chilocorus geminus: Bielawski 1975.

General distribution: Uzbekistan, Southern Turkmenia, Mongolia, China.

http://rcin.org.pl

bipustulatus (LINNAEUS, 1758)

Chilocorus bipustulatus: WEISE 1890.

General distribution: Palaearctic.

Exochomus REDTENBACHER, 1843

semenowi WEISE, 1887

Exochomus semenowi WEISE, 1887.
Exochomus semenowi: BAROVSKY 1922, KORSCHEFSKY 1932, MADER 1955, BIELAWSKI 1968b.

General distribution: Mongolia.

mongol BAROVSKY, 1922

Exochomus mongol BAROVSKY, 1922.
Exochomus mongol: KORSCHEFSKY 1932, Mader 1955, Bielawski 1965, 1968a, 1975.

General distribution: Mongolia.

quadripustulatus (LINNAEUS, 1758)

General distribution: almost the whole of the Palaearctic, reaching the Korean Peninsula and Japan.

nigromaculatus (GOEZE, 1777)

Syn.: *flavipes* auct. nec THUNBERG

General distribution: Europe, Asia Minor, Arabia, USSR (Georgia, Kazakhstan), Mongolia.

kiritshenkoi BAROVSKY, 1922

General distribution: Iran, Soviet Central Asia, Mongolia.

Brumus MULSANT, 1850

jacobsoni BAROVSKY, 1928

Brumus jacobsoni BAROVSKY, 1928.
Brumus jacobsoni: KORSCHEFSKY 1932, MADER 1955, BIELAWSKI 1975.

General distribution: Kazakhstan, Mongolia.

octosignatus (GEBLER, 1830)

Brumus octosignatus: CROTCH 1874, BAROVSKY 1928, BIELAWSKI 1968b, 1975.

General distribution: Sicily, Corsica, Eastern Mediterranean, Iraq, Afghanistan, SE Soviet Union, Siberia, Mongolia.

http://rcin.org.pl

mongolicus FLEISCHER, 1900

Brumus mongolicus FLEISCHER, 1900.
Brumus mongolicus: BAROVSKIJ 1928, KORSCHEFSKY 1932, MADER 1955, BIELAWSKI 1968b.

General distribution: Transbaicalia, Mongolia.

Anisosticta DEJEAN, 1835

sibirica BIELAWSKI, 1958

Anisosticta sibirica: BIELAWSKI 1968a.

General distribution: Transbaicalia, Mongolia.

strigata (THUNBERG, 1795)

Anisosticta strigata: BIELAWSKI 1968b.

General distribution: Northern Europe, Siberia, Mongolia, China, Alaska.

terminassianae BIELAWSKI, 1959

Anisosticta terminassianae: BIELAWSKI 1965, 1975.

General distribution: Transbaicalia, Mongolia, China.

Hippodamia MULSANT, 1846

tredecimpunctata (LINNAEUS, 1758)

Hippodamia tredecimpunctata: BIELAWSKI 1968b.

General distribution: Europe, Caucasus, Asia, Norh America.

septemmaculata (DEGEER, 1775)

Hippodamia septemmaculata: RYBAKOW 1889, BIELAWSKI 1975.

General distribution: Central and Northern Europe, Siberia, Mongolia, Japan.

Adonia MULSANT, 1846

variegata (GOEZE, 1777)

Adonia variegata: RYBAKOW 1889, WEISE 1889, KORSCHEFSKY 1932, DOBZHANSKY 1933, BIELAWSKI 1964, 1965, 1968a, 1968b, 1975.

General distribution: Palaearctic, Central Africa, India.

http://rcin.org.pl

amoena (FALDEMAR, 1835)

Adonia amoena: von HEYDEN 1909, MUNSTER 1923, WINKLER 1927, MADER 1928, KORSCHEFSKY 1932, BIELAWSKI 1964, 1965, 1968a, 1968b, 1975.

General distribution: Kazakhstan, Siberia, Mongolia.

Semiadalia CROTCH, 1874

notata (LAICHARTING, 1781)

Semiadalia notata: MUNSTER 1923.

General distribution: Central Europe, Greece, Caucasus, Armenia, Mongolia.

Spiladelpha SEMENOV-TIAN-SHANSKIJ et DOBZHANSKY, 1923

barovskii SEMENOV-TIAN-SHANSKIJ et DOBZHANSKY, 1923

Spiladelpha barovskii: MADER 1935, BIELAWSKI 1968b, 1975.

General distribution: Mongolia.

Aages BAROVSKIJ, 1926

prior BAROVSKIJ, 1926

Aages prior BAROVSKIJ, 1926.
Aages prior: CAPRA 1927, DOBZHANSKY 1927, MADER 1929, KORSCHEFSKY 1932.

General distribution: Southern and Eastern Mongolia.

Tytthaspis CROTCH, 1874

lateralis FLEISCHER, 1900

Micraspis sedecimpunctata v. *lateralis* FLEISCHER 1900.
Tytthaspis sedecimpunctata: BIELAWSKI 1964, 1968a, 1975.

General distribution: Mongolia.

trilineata WEISE, 1889

Tytthaspis trilineata: BIELAWSKI 1965, 1968b, 1975.

General distribution: Mongolia, China, Tibet.

http://rcin.org.pl

Bulaea Mulsant, 1850

lichatschovi (Hummel, 1827)

Bulaea lichatschovi: Bielawski 1968b, 1975.

General distribution: Hungary, Bulgaria, Macedonia, Greece, Asia Minor, Southern Soviet Union, Afghanistan, Mongolia, Northern and Central Africa.

Adalia Mulsant, 1850

conglomerata (Linnaeus, 1758)

Adalia conglomerata: Bielawski 1965, 1968a, 1968b.

General distribution: Central and Northern Europe, Siberia, Mongolia, Japan.

decempunctata (Linnaeus, 1758)

Adalia decempunctata: Bielawski 1975.

General distribution: Europe, Asia, Northern Africa.

bipunctata (Linnaeus, 1758)

Adalia bipunctata: Bielawski 1975.

General distribution: Palaearctic, North America, North and Central Africa.

fasciatopunctata (Faldermann, 1835)

Adalia fasciatopunctata: von Heyden 1909, Bielawski 1965, 1968a, 1968b, 1975.

General distribution: Asia Minor, Caucasus, Siberia, Mongolia.

frigida (Schneider, 1792)

Adalia frigida: Munster 1923.

General distribution: Northern Europe, Siberia, Mongolia, North America.

Coccinella Linnaeus, 1758

septempunctata Linnaeus, 1758

Coccinella septempunctata: Weise 1889, von Heyden 1909, Munster 1923, Dobzhansky 1926, 1927, Bielawski 1964, 1965, 1968a, 1968b, 1975.

General distribution: Palaearctic, India.

http://rcin.org.pl

withi Mulsant, 1850

Coccinella nivicola: Dobzhansky 1926, 1933.
Coccinella withi: Mader 1930, Ružička 1942, Korschefsky 1932, Bielawski 1975.

General distribution: Eastern Siberia and Kamchatka, Mongolia, China (Inner Mongolia).

transversoguttata Faldermann, 1835

Coccinella transversoguttata: von Heyden 1909, Munster 1923, Dobzhansky 1926, 1933, Bielawski 1964, 1965, 1968a, 1968b, 1975.

General distribution: Lapland, Siberia, Mongolia, Japan, Northern China, Aleutian Is., North America, Mexico.

tianshanica Dobzhansky, 1927

Coccinella tianshanica: Bielawski 1965, 1975.

General distribution: Afghanistan, Soviet Central Asia (Tien Shan Mts.), Mongolia.

quinquepunctata Linnaeus, 1758

Coccinella quinquepunctata: Munster 1923, Dobzhansky 1926, Mader 1930.

General distribution: Europe, Caucasus, Siberia reaching Sakhalin, Mongolia, China, Northern Africa.

hieroglyphica mannerheimi Mulsant, 1950

Coccinella hieroglyphica mannerheimi: Dobzhansky 1926, Brown 1962, Bielawski 1965, 1968a, 1968b, 1975.
Coccinella mannerheimi: Mader 1930, Korschefsky 1932, Ružička 1942.

General distribution: Siberia (from Baical to Sakhalin), Mongolia, North America (from Alaska to Hudson Bay).

trifasciata Linnaeus, 1758

Coccinella trifasciata: von Heyden 1909, Munster 1923, Mader 1930, Korschefsky 1932, Dobzhansky 1933, Ružička 1942, Bielawski 1964, 1965, 1968a, 1968b, 1975.

General distribution: Northern Europe, Alps, Siberia, Mongolia, Tibet, Northern China, U.S.A. (California, Oregon).

divaricata Olivier, 1808

Coccinella distincta: Rybakow 1889.
Coccinella transversoguttata v. *sedakowi*: Munster 1923.
Coccinella divaricata a. *sedakowi*: Munster 1923.
Coccinella divaricata: Dobzhansky 1926, 1933, Bielawski 1964, 1965, 1968a, 1975.

General distribution: Europe, Asia, Northern Africa.

http://rcin.org.pl

undecimpunctata LINNAEUS, 1758

Coccinella undecimpunctata: RYBAKOW 1889, DOBZHANSKY 1926, 1927, BIELAWSKI 1965, 1968b, 1975.

General distribution: Europe, Asia, Northern Africa, introduced to North America.

Coccinula DOBZHANSKY, 1929

quatuordecimpustulata sinensis (WEISE, 1889)

Coccinella quatuordecimpustulata: MUNSTER 1923.
Coccinula quatuordecimpustulata: DOBZHANSKY 1925.
Coccinula quatuordecimpustulata sinensis: BIELAWSKI 1964, 1965, 1968a, 1968b, 1975.

General distribution: Mongolia, Southeastern Siberia, China.

elegantula (WEISE, 1890)

Coccinella elegantula WEISE, 1890.
Coccinula elegantula: DOBZHANSKY 1925, MADER 1931.
Coccinella elegantula: KORSCHEFSKY 1932.
Coccinella redemita principialis: BIELAWSKI 1968b, 1975.

General distribution: Kazakhstan, Mongolia, Sinkiang.

Harmonia MULSANT, 1950

axyridis (PALLAS, 1773)

Leis spectabilis: MULSANT 1866.
Leis axyridis v. *novemdecimsignata*: von HEYDEN 1909.
Leis axyridis v. *frigida*: DOBZHANSKY 1924, von HEYDEN 1909.
Coccinella axyridis: MUNSTER 1923, KORSCHEFSKY 1932.
Harmonia axyridis: DOBZHANSKY 1924.
Harmonia axyridis axyridis: MADER 1932, BIELAWSKI 1965, 1968b, 1975.
Harmonia axyridis novemdecimsignata: BIELAWSKI 1964, 1965, 1968b, 1975.

General distribution: Siberia, Mongolia, Korean Peninsula, Sakhalin, Japan, China, Taiwan.

Synharmonia GANGLBAUER, 1899

conglobata (LINNAEUS, 1758)

Coccinella octodecimpunctata: RYBAKOW 1889, WEISE 1889.
Synharmonia conglobata: von HEYDEN 1909, BIELAWSKI 1968b.
Coccinella conglobata desertorum: KORSCHEFSKY 1932.
Synharmonia conglobata v. *buphthalmus*: DOBZHANSKY 1933.
Synharmonia conglobata buphthalmus: BIELAWSKI 1975.

General distribution: Palaearctic.

http://rcin.org.pl

oncina (OLIVIER, 1808)

Synharmonia oncina: BIELAWSKI 1968b.

General distribution: Eastern Mediterranean, Eastern and Central Asia.

Myrrha MULSANT, 1846

octodecimguttata (LINNAEUS, 1758)

Myrrha octodecimguttata: BIELAWSKI 1964.

General distribution: Europe, Siberia, Transbaicalia, Mongolia.

Calvia MULSANT, 1850

duodecimmaculata (GEBLER, 1832)

Coccinella duodecimmaculata: MUNSTER 1923.
Calvia duodecimmaculata: BIELAWSKI 1975.

General distribution: Transbaicalia, Mongolia, Japan, North America.

decemguttata (LINNAEUS, 1767)

General distribution: Europe, Siberia, Mongolia, China, Japan.

quindecimguttata (FABRICIUS, 1777)

Calvia quindecimguttata: MUNSTER 1923.

General distribution: Europe, Siberia, Mongolia, Japan.

quatuordecimguttata (LINNAEUS, 1758)

Calvia quatuordecimguttata: BIELAWSKI 1975.

General distribution: Europe, Siberia, Mongolia, Sakhalin, Japan, North America.

Propylaea MULSANT, 1846

quatuordecimpunctata (LINNAEUS, 1758)

Propylaea quatuordecimpunctata: von HEYDEN 1909, BIELAWSKI 1964, 1968a, 1968b, 1975.

General distribution: Europe, Asia Minor, Caucasus, Siberia, Mongolia, Korean Peninsula, Japan.

http://rcin.org.pl

Neomysia Casey, 1899

oblongoguttata (Linnaeus, 1758)

General distribution: Europe, Asia.

ramosa (Faldermann, 1833)

Syn.: *gebleri* Crotch, 1874.
Neomysia ramosa: Bielawski 1975.

General distribution: Siberia, Mongolia, Japan.

Anatis Mulsant, 1846

ocellata (Linnaeus, 1758)

Anatis ocellata: Munster 1923, Bielawski 1964, 1975.

General distribution: Europe, Asia.

Halyzia Mulsant, 1846

sedecimguttata (Linnaeus, 1758)

Halyzia sedecimguttata: Bielawski 1964, 1965, 1968a, 1968b.

General distribution: Europe, Asia Minor, Caucasus, Siberia, Mongolia, Japan.

Vibidia Mulsant, 1846

duodecimguttata (Poda, 1761)

Vibidia duodecimguttata: Munster 1923.

General distribution: Europe, Caucasus, Asia Minor, Siberia, Mongolia.

Thea Mulsant, 1846

vigintiduopunctata (Linnaeus, 1758)

Thea vigintiduopunctata: Bielawski 1965, 1968a, 1975.

General distribution: Palaearctic.

http://rcin.org.pl

ZOOGEOGRAPHICAL ANALYSIS

Mongolia is situated in the Central-Asiatic zoogeographical subregion and covers the Mongolian province established by SEMENOV-TIAN-SHANSKIJ (1936). The division of the Palaearctic made by the above author on the basis of distribution of the *Coleoptera* is the closest to the distribution of the *Coccinellidae*. Other zoogeographical divisions of the Palaearctic based on the distribution of particular families of *Coleoptera* (e.g. *Dermestidae* – MROCZKOWSKI 1968) differ only slightly from the division adopted by SEMENOV-TIAN-SHANSKIJ.

After an analysis of the distribution of *Coccinellidae* species, their fauna has been divided into the following 11 zoogeographical elements:

1. Subcosmopolitan element. Species occurring all over the Palaearctic, but found also in the Oriental or Ethiopian Region. Only one Mongolian species – *Adonia variegata* belongs to this.

2. Palaearctic element. Species occurring all over the Palaearctic or over most of it, but their large range always includes Northern Africa. Here belong the following species: *Subcoccinella vigintiquatuorpunctata*, *Stethorus punctillum*, *Scymnus suturalis*, *S. interruptus*, *Chilocorus bipustulatus*, *Ch. renipustulatus*, *Exochomus quadripustulatus*, *Adalia decempunctata*, *Coccinella septempunctata*, *C. quinquepunctata*, *C. divaricata*, *C. undecimpunctata*, *Synharmonia conglobata conglobata*, *Thea vigintiduopunctata*.

3. Oriental element. Species whose range covers the whole of the Oriental Region and a small part of the Palaearctic. Only one species – *Chilocorus rubidus* belongs here.

4. Holarctic element. Species occurring all over the Palaearctic or in some part of it, and in North America. These are: *Anisosticta strigata*, *Hippodamia tredecimpunctata*, *Adalia bipunctata*, *A. frigida*, *Coccinella transversoguttata*, *C. trifasciata*, *C. hieroglyphica mannerheimi*, *Calvia duodecimmaculata*, *C. quatuordecimguttata*.

5. Euro-Siberian element. Species occurring in Europe and Siberia. Eighteen following species belong here: *Coccidula rufa*, *Scymnus ferrugatus*, *S. nigrinus*, *S. abietis*, *S. frontalis*, *S. bipunctatus*, *Exochomus nigromaculatus*, *Hippodamia septemmaculata*, *Semiadalia notata*, *Adalia conglomerata*, *Myrrha octodecimguttata*, *Calvia decemguttata*, *C. quindecimguttata*, *Propylaea quatuordecimguttata*, *Neomysia oblongoguttata*, *Anatis ocellata*, *Halyzia sedecimguttata*, *Vibidia duodecimguttata*.

6. Siberian element. Species with most part of their range situated in Siberia. These are: *Coccidula reitteri*, *Scymnus jakowlewi*, *S. incinctus*. *S. spilotus*, *Brumus jacobsoni*, *B. mongolicus*, *Anisosticta sibirica*, *A. terminassianae*, *Adonia amoena*, *Coccinella withi*, *Harmonia axyridis*, *Neomysia ramosa*.

7. Mediterranean-Turanian element. Species occurring from the basin of the Mediterranean Sea through Asia Minor and Central Asia to Mongolia or even farther towards the East. Here belong: *Scymnus doriai*, *Brumus octosignatus*, *Bulaea lichatschovi*, *Oxynychus erythrocephalus*, *Synharmonia oncina*.

http://rcin.org.pl

8. Iranian-Turanian element. Asia Minor and Central Asia constitute the main part of the range of the species that belong here. These are: *Scymnus manipulus*, *S. inderihensis*, *Oxynychus alexandrae*, *Chilocorus geminus*, *Exochomus kiritshenkoi*, *Adalia fasciatopunctata*, *Coccinella tianshanica*, *Coccinula elegantula*, *Synharmonia conglobata buphthalmus*.

9. Manchurian element. The Far East constitutes the main part of the range of the species that belong here: *Hyperaspis asiatica*, *H. leechi*, *Coccinula quatuordecimpustulata sinensis*.

10. Tibetan-Chinese element. Species occurring to the south of Mongolia — Mongolia, Tibet, China. Here belong: *Scymnus obsoletus*, *Tytthaspis trilineata*.

11. Mongolian element. The range of the species are restricted mainly to Mongolia, but may expand a little towards the north or the south. There are thirteen species of this type: *Lithophilus kozlovi*, *L. kiritschenkoi*, *Scymnus mongolicus*, *S. urgensis*, *S. bogdoensis*, *S. kaszabi*, *S. changajensis*, *Pharoscymnus brunneosignatus*, *Exochomus semenovi*, *Exochomus mongol*, *Spiladelpha barovskii*, *Aeges prior*, *Tytthaspis lateralis*.

The percentage of the particular elements of *Coccinellidae* species in the fauna of Mongolia is as follows (Fig. 1): subcosmopolitan element 1.15 %, Palaearctic 16.10 %, Oriental 1.15 %, Holarctic 10.35 %, Euro-Siberian 20.70 %, Siberian 13.80 %, Mediterranean-Turanian 5.75 %, Iranian-Turanian 10.35 %, Manchurian 3.45 %, Tibetan-Chinese 2.30 %, Mongolian 14.95 %. In the fauna

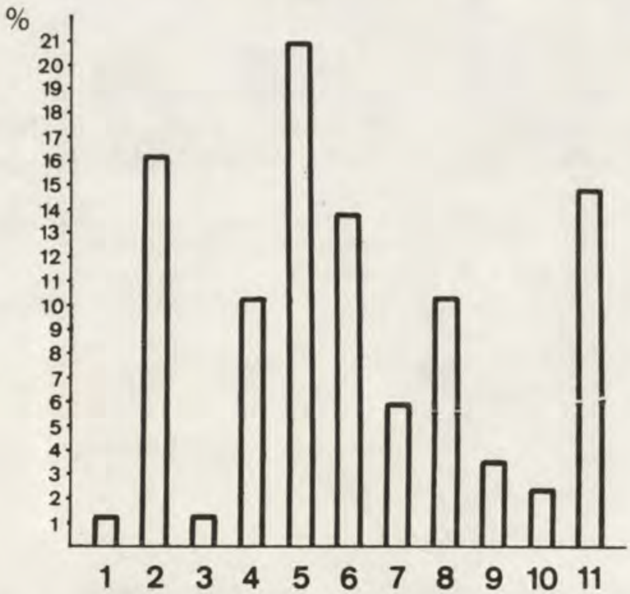


Fig. 1. Percentage of zoogeographical elements in the *Coccinellidae* fauna of Mongolia. 1 — subcosmopolitan element, 2 — palaearctic element, 3 — oriental element, 4 — holarctic element, 5 — Euro-Siberian element, 6 — Siberian element, 7 — Mediterranean-Turanian element, 8 — Iranian-Turanian element, 9 — Manchurian element, 10 — Tibetan-Chinese element, 11 — Mongolian element.

http://rcin.org.pl

of Mongolia, the elements comprising species with large ranges covering Siberia constitute a greater percentage. Most abundantly represented elements are the Euro-Siberian, Palaearctic and Siberian ones. Species with a very limited range are also fairly numerous in the fauna of Mongolia, and the Mongolian element constitutes as much as 14.95 % thus proving the strongly individual zoogeographic character of this area. Therefore it seems justified to maintain the opinion of SEMENOV-TIAN-SHANSKIJ and consider this area to be a separate zoogeographical province. It is worth pointing out that in the fauna of Mongolia the percentage of the Iranian-Turanian element is fairly high and that of the Manchurian element is minimal.

In order to compare the *Coccinellidae* of Mongolia with those of other part of the Palaearctic, the similarity and affinity coefficients have been calculated on the basis of the formulae of JACCARD and STEINHAUS and of SZYMKIEWICZ's formula (KOSTROWICKI 1965). The comparison is based on nine areas with relatively complete lists of *Coccinellidae*: Japan, Korea, region near the Baical Lake, region between the rivers Ob and Yenissey, Tuva, vicinity of Leningrad, Ukraine, Poland, Balcan Peninsula. The data obtained are given in Table 2 and represented graphically in Fig. 2.

An analysis of the results reveals that the fauna of *Coccinellidae* of Mongolia demonstrates strong connections with the faunas situated west of this area and insignificant connections with the faunas found east of it. The *Coccinellidae* fauna of Mongolia shows the highest similarity and affinity to the fauna of the Baical Lake area, of the region between the Lower Ob and Yenissey and of Tuva. The similarity coefficient reaches 60, the affinity coefficient reaches almost 80 and there are over 40 common species. When compared to the faunas of the European areas, the fauna of Mongolia demonstrates the highest affinity to the fauna of the vicinity of Leningrad: the similarity coefficient is here

Table 2. Comparison of the *Coccinellidae* fauna of Mongolia with some other areas

Zoogeographical areas	Number of species	Number of common species	Similarity coefficient	Affinity coefficient
Mongolia	87	87	100	100
Japan	153	15	19	17
Korea	52	19	27.5	37
Baical Lake area	52	43	62	83
Ob–Yenissey	53	42	59	79
Tuva	58	45	62	78
Leningrad	50	36	53	72
Ukraine	71	38	48	54
Poland	68	36	46.5	53
Balkan Peninsula	86	35	40	41

http://rcin.org.pl

low and close to that for Ukraine and Poland, but the affinity coefficient is fairly high and close to that for the areas in Siberia, and not to the coefficient for the European areas. Out of the western areas studied, the Balkan Peninsula has a fauna least similar to the *Coccinellidae* of Mongolia. It is interesting that

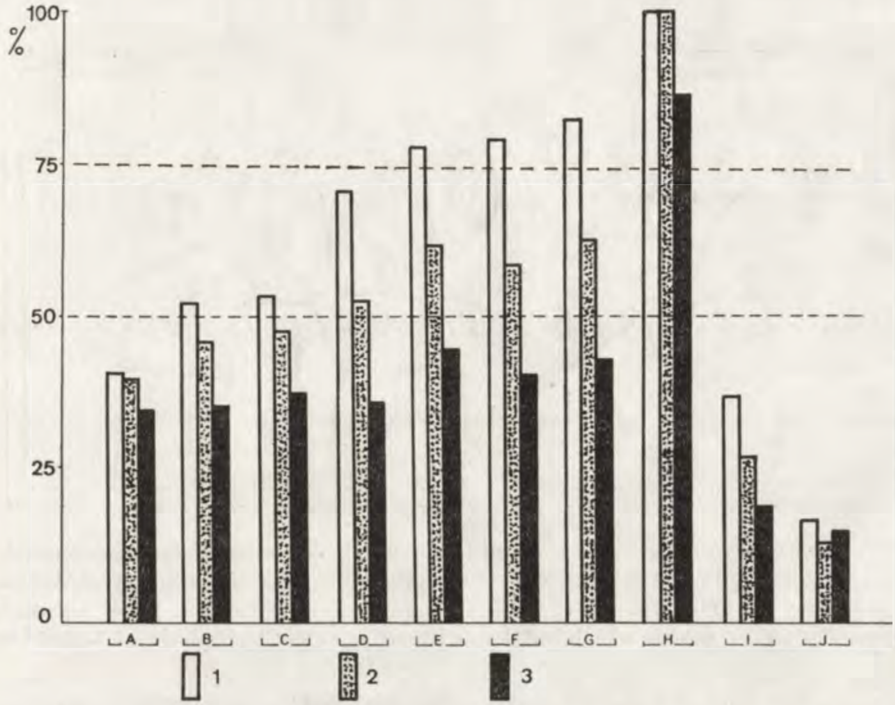


Fig. 2. Affinity and similarity of the *Coccinellidae* faunas in different regions. 1 — affinity coefficient, 2 — similarity coefficient, 3 — number of common species. A — Balcan Peninsula, B — Poland, C — Ukraine, D — vicinity of Leningrad, E — Tuva, F — region between the rivers Ob and Yenissey, G — region near the Baical Lake, H — Mongolia, I — Korea, J — Japan.

for all the areas compared, the number of species common with the fauna os Mongolia is very close and varies slightly. A comparison of the eastern faunas shows that there is only insignificant similarity and affinity between the faunaf of Korea and Japan and the fauna of Mongolia. Thus, the fauna of *Coccinellidae* of Mongolia is closer to that of Poland, for instance, than to the fauna of Korea.

DISTRIBUTION IN MONGOLIA

The distribution of *Coccinellidae* in Mongolia has been studied from two points of view. Firstly, their distribution from the north southwards has been considered and, in this case, Mongolia has been divided into a northern part

http://rcin.org.pl

(aimaks 3, 4, 7, 13, 16, 17), a central part (aimaks 8, 9, 14) and a southern part (aimaks 1, 2, 5, 6, 10, 11, 12, 18). Secondly, their distribution from the west eastwards has been considered and Mongolia has been divided into a western part (aimaks 1–5), a central part (aimaks 6–15) and an eastern part (aimaks 16–18) (Fig. 3).



Fig. 3. Administrative division of Mongolia (aimaks). 1 – Bayan-ölgiy, 2 – Khovd, 3 – Uvs, 4 – Zavkhan, 5 – Gov'altai, 6 – Bayankhongor, 7 – Khövsgöl, 8 – Arkhangay, 9 – Övörkhangay, 10 – Ömnögov, 11 – Dundgöv, 12 – Dornogov, 13 – Bulgan, 14 – Töv (Central), 15 – Sukhbaatar Khot, 16 – Khentiy, 17 – Choybalsan, 18 – Sukhbaatar.

An analysis of the distribution from the north southwards reveals that the greatest number of species (21) occurs from the north to the south. Some of these species occur over the whole or almost the whole Mongolia, and they are mainly the three following species: *Adonia variegata*, *Coccinella transversoguttata* and *C. septempunctata*. Seven species have been recorded in Northern Mongolia: *Coccidula rufa*, *Scymnus jakowlewi* (Fig. 4), *Hyperaspis asiatica*, *Anisosticta sibirica*, *A. terminassianae*, *Coccinella quinquepunctata*, *Calvia quatuordecimguttata*. Fifteen species have been recorded in the central part only and 16 species only in the south (e.g. *Scymnus obsoletus* – Fig. 4), 11 species occur both in northern and in central Mongolia, but there are only 3 species common to the central and southern parts: *Scymnus changajensis*, *S. incinctus* and *Hippodamia tredecimpunctata*. Four species occurring in the northern and southern parts have never been recorded in the central part.

An analysis of the distribution from the west eastwards reveals that three species occur in the western part: *Exochomus semenovi*, *E. nigromaculatus* and *Spiladelpha barovskii* (Fig. 5) and only two in the eastern part: *Coccidula rufa* and *Anisosticta sibirica*. Only one species – *Scymnus manipulus* – has been recorded in the western and southern parts, but not in the central one. The

http://rcin.org.pl

greatest number of species (36) have been recorded in the central part. Fifteen species occur in the western and central parts of Mongolia, 9 species in the central and eastern parts, and 11 species occur from the west to the east.

A more detailed analysis of the distribution may be carried out when both the distribution from the north southards and the distribution from the west eastwards are taken into consideration. Thus, species recorded in the western part only have a southern distribution (*Exochomus semenovi*, *E. nigromaculatus* and *Spiladelpha barovskii*) and those recorded in the eastern part have a northern distribution (*Coccidula rufa* and *Anisosticta sibirica*) (Fig. 5). Out of the 86

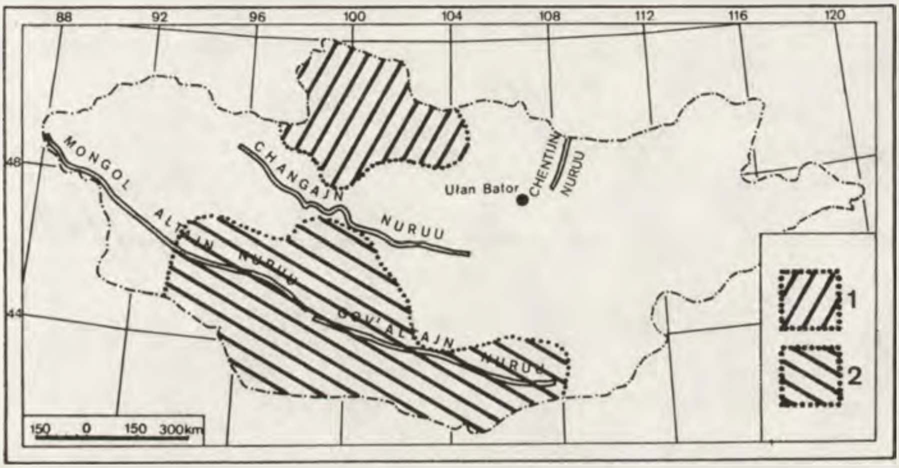


Fig. 4. Distribution in Mongolia. 1 — *Scymnus* (*S.*) *jakowlewi* Ws., northern type of distribution; 2 — *Scymnus* (*P.*) *obsoletus* Ws., southern type of distribution.

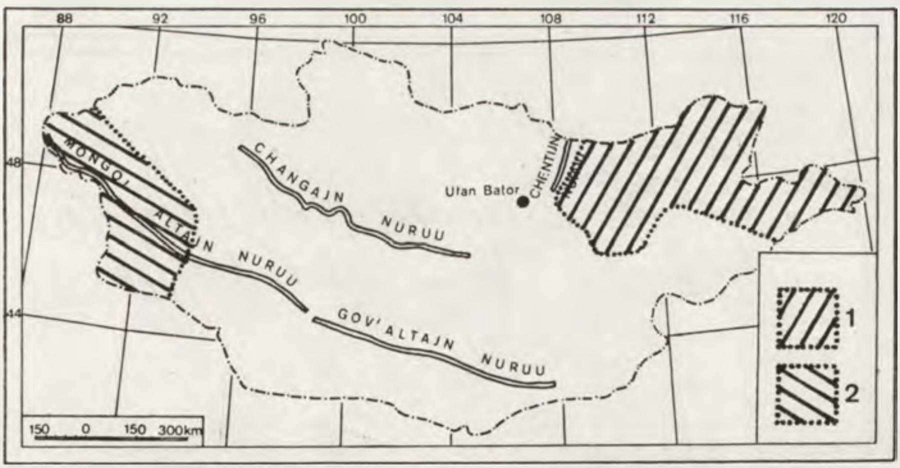


Fig. 5. Distribution in Mongolia. 1 — *Anisosticta sibirica* Biel., eastern type of distribution; 2 — *Spiladelpha barovskii* Sem. et Dobzh., western type of distribution.

http://rcin.org.pl

species recorded in Mongolia only 11 may be assumed to occur over the whole or almost the whole of this country. They are: *Scymnus inderihensis*, *Oxynychus erythrocephalus*, *Adonia variegata*, *A. amoena*, *Adalia fasciatopunctata*, *Coccinella transversoguttata*, *C. septempunctata*, *C. hieroglyphica mannerheimi*, *C. divaricata*, *Propylaea quatuordecimpunctata*, *Anatis ocellata* (Figs 6, 7). The following species have been recorded in the middle-central part only: *Stethorus punctillum*, *Scymnus ferrugatus*, *S. suturalis*, *S. nigrinus*, *S. abietis*, *S. bogdoensis*, *Hyperaspis leechi*, *Exochomus quadripustulatus*, *Anisosticta strigata*, *Adalia conglomerata*, *A. decempunctata*, *A. frigida*, *Synharmonia conglobata conglobata*,

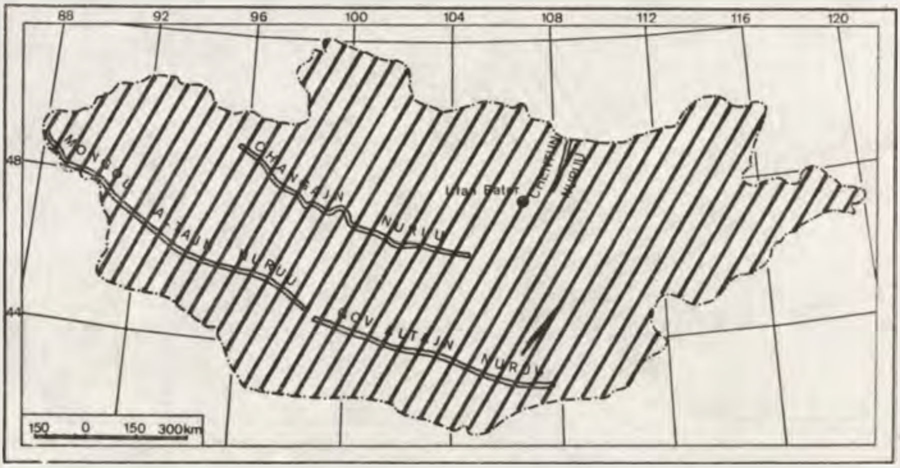


Fig. 6. Distribution in Mongolia. *Coccinella transversoguttata* Fald.

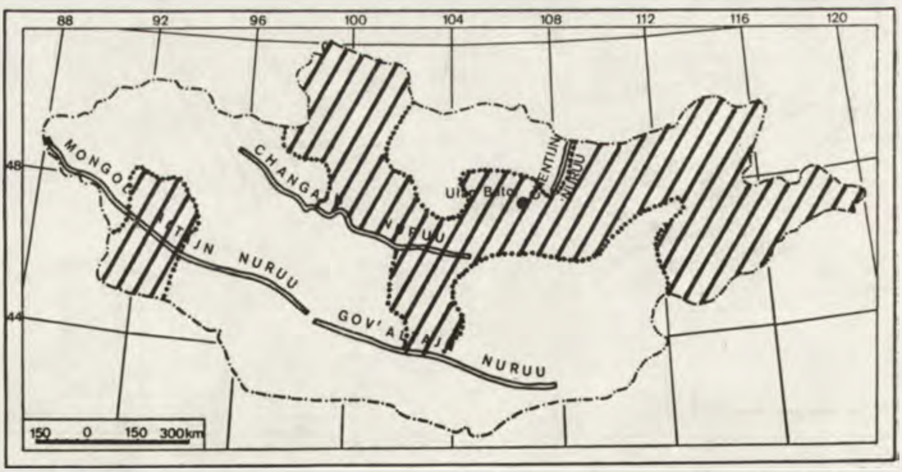


Fig. 7. Distribution in Mongolia. *Oxynychus erythrocephalus* (F.).

http://rcin.org.pl

Myrrha octodecimguttata, Neomysia oblongoguttata (Fig. 8). Most of these species are widely distributed and also occur in Europe, but in Mongolia they are species found very seldom. However, two of them have a restricted distribution: *Scymnus bogdoensis* has only recently been described and the range of *Hyperaspis leechi* stretches farther towards the Far East. Other species recorded in the

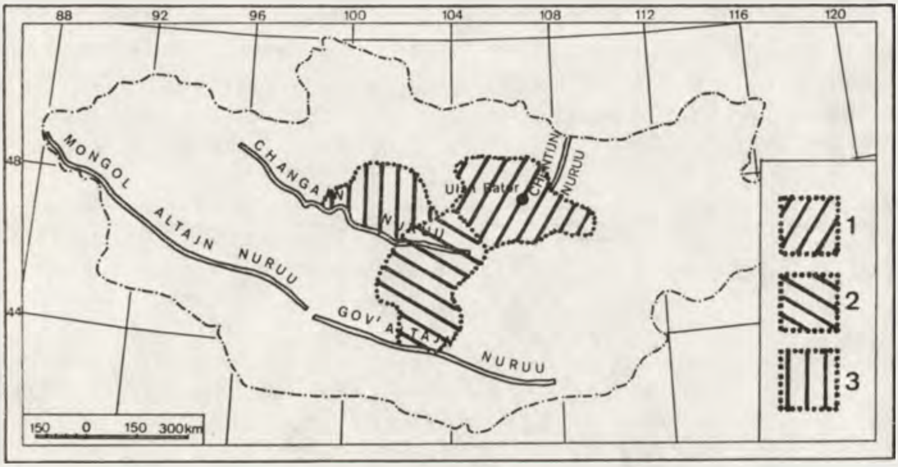


Fig. 8. Distribution in Mongolia. 1 – *Scymnus* (*P.*) *ferrugatus* (Moll), *Scymnus* (*P.*) *suturalis* Thnbg., *Scymnus* (*S.*) *abietis* Payk., *Stethorus punctillum* Ws., *Adalia conglomerata* (L.), *Adalia decempunctata* (L.), *Adalia frigida* (Schn.), *Synharmonia conglobata conglobata* (L.), *Myrrha octodecimguttata* (L.), *Neomysia oblongoguttata* (L.); 2 – *Hyperaspis leechi* Miyat.; 3 – *Scymnus* (*S.*) *nigrinus* Kugel., *Anisosticta strigata* (Thnbg.), *Exochomus quadripustulatus* (L.).

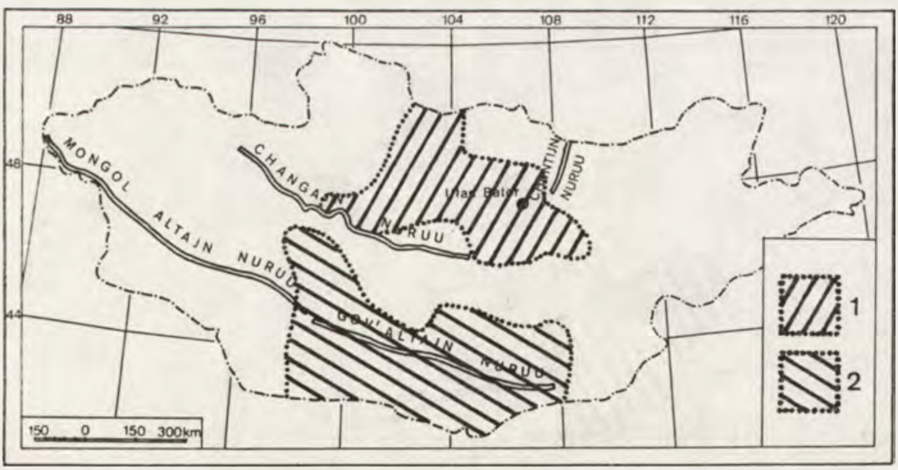


Fig. 9. Distribution in Mongolia. 1 – *Calvia duodecimmaculata* (Gebl.), northern-central type of distribution; 2 – *Brumus jacobsoni* Bar., southern-central type of distribution.

http://rcin.org.pl

central part occur in the north only, and they are: *Scymnus urgensis*, *S. jakowlewi*, *Hyperaspis asiatica*, *Chilocorus renipustulatus*, *Brumus mongolicus*, *Anisosticta terminassianae*, *Coccinella quinquepunctata*, *Calvia duodecimmaculata* (Fig. 9), *Calvia quatuordecimguttata*, *Neomysia ramosa*, *Halyzia sedecimguttata*, as well as a number of other species occurring in the south only: *Lithophilus kiritschenkoi*, *Scymnus kaszabi*, *S. incinctus*, *S. changajensis*, *Pharascymnus brunneosignatus*, *Chilocorus geminus*, *Exochomus kiritschenkoi*, *Brumus jacobsoni* (Fig. 9), *Hippodamia tredecimpunctata*, *Synharmonia conglobata buphthalmus*. Most of these species have restricted ranges and 5 of them are endemites. Only few species have fairly large ranges; species occurring in the north have ranges extending to Siberia and some ranges extend through Siberia to Europe. With

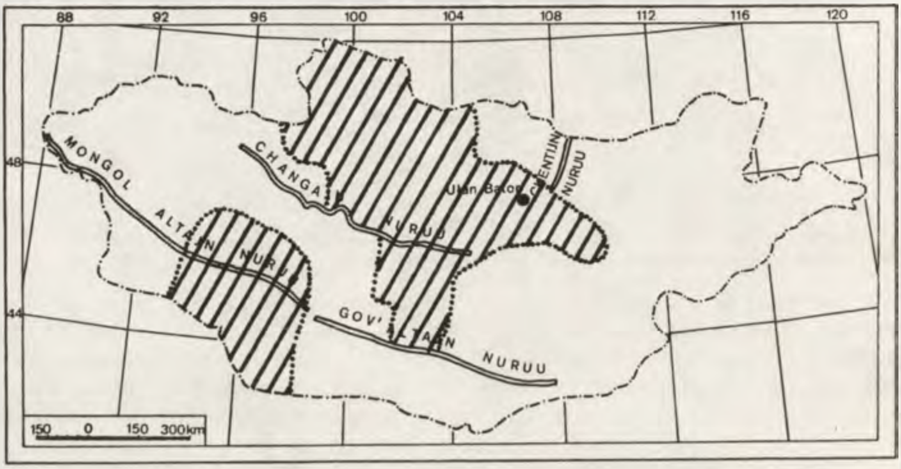


Fig. 10. Distribution in Mongolia. *Tythaspis trilineata* Ws.

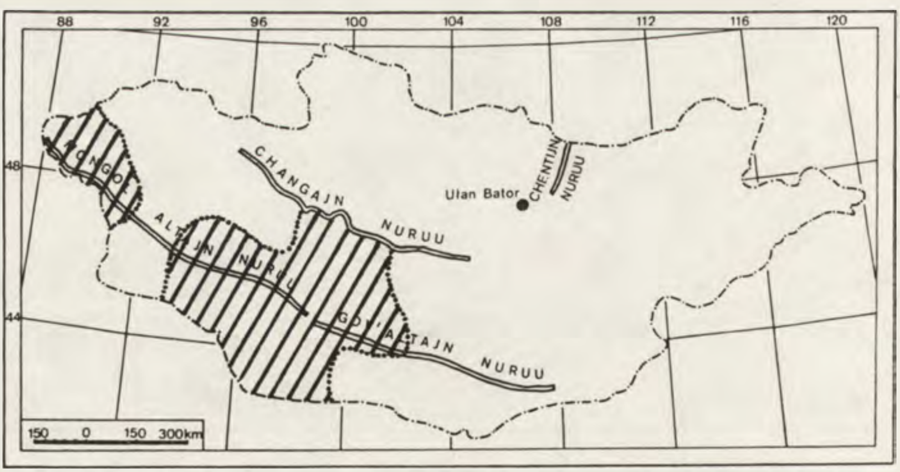


Fig. 11. Distribution in Mongolia. *Brumus octosignatus* (Gebl.).

http://rcin.org.pl

one exception, this phenomenon has not been observed in species occurring in the south for if their range extends, it is towards Central Asia or in the south-western direction.

There are 9 species found in the central and western parts and they usually occur from the north to the south: *Lithophilus kozlovi*, *Scymnus bipunctatus*, *Tytthaspis trilineata* (Fig. 10), *Adalia bipunctata*, *Coccinella withi*, *C. tianshanica*, *C. undecimpunctata*, *Harmonia axyridis*; five species recorded in the same areas occur in the south only: *Scymnus mongolicus*, *S. obsoletus*, *Brumus octosignatus* (Fig. 11), *Bulaea lichatschovi*, *Coccinula elegantula*, *Synharmonia oncina*; only one species has a northern distribution: *Hippodamia septemmaculata* (Fig. 12). Species recorded simultaneously in the central and eastern parts of Mongolia

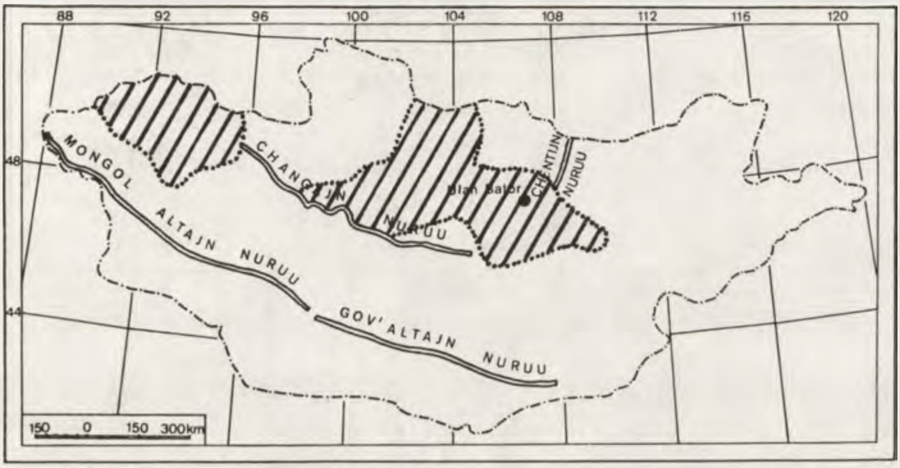


Fig. 12. Distribution in Mongolia. *Hippodamia septemmaculata* (DEG.).

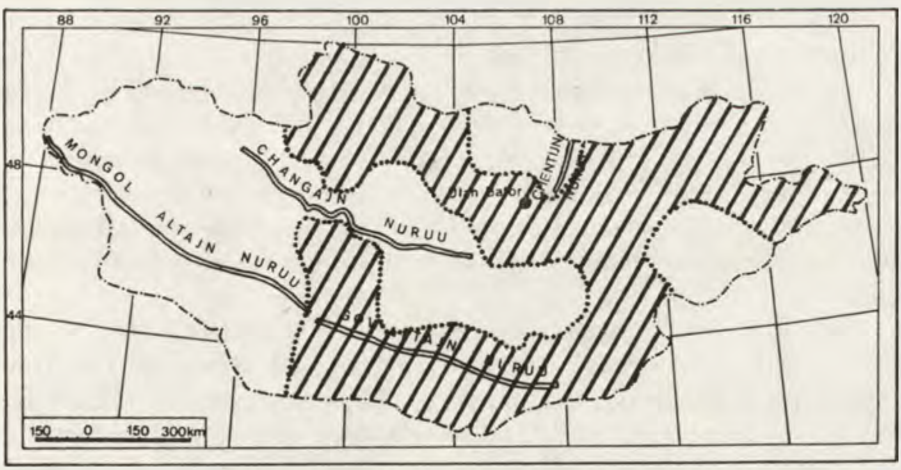


Fig. 13. Distribution in Mongolia. *Coccinella quatuordecimpustulata sinensis* (Ws.).

http://rcin.org.pl

usually have a distribution from the north to the south: *Scymnus frontalis*, *S. spilotus*, *Exochomus mongol*, *Tytthaspis lateralis*, *Coccinula quatuordecimpustulata sinensis* (Fig. 13) or a northern distribution: *Subcoccinella vigintiquatuorpunctata*, *Scymnus doriai*, *Coccinella trifasciata* (Fig. 14), *Thea vigintiduopunctata*. No species with a southern distribution has been recorded in this group.

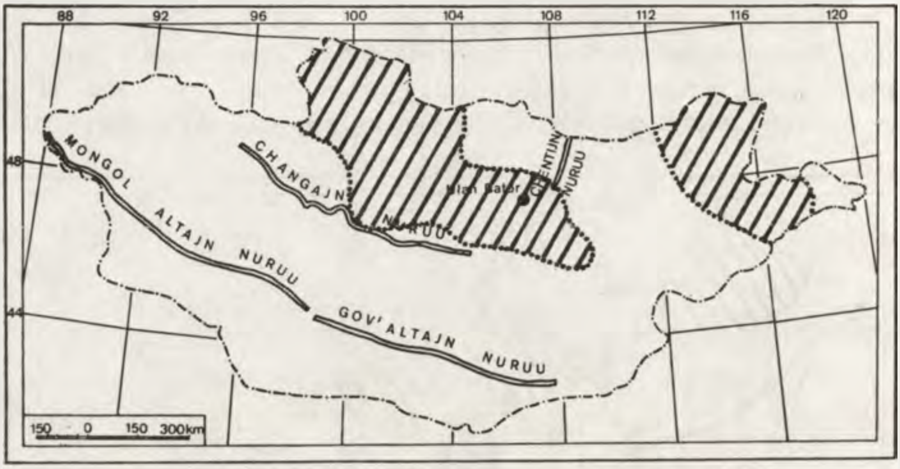


Fig. 14. Distribution in Mongolia. *Coccinella trifasciata* L.

There is a certain regularity in the occurrence of *Coccinellidae* in Mongolia, namely, species with their ranges in this country more restricted towards the west have a more and more southern distribution, and species with their ranges restricted towards the east have a more and more northern distribution. In extreme cases, a species recorded only in the western part of Mongolia occurs in the south, and species recorded only in the eastern part occurs in the north.

The ranges of most endemic species cover mainly the central part of Mongolia (*Lithophilus kiritschenkoi*, *Scymnus urgensis*, *S. bogdoensis*, *S. kaszabi*, *S. changajensis*, *Pharoscymnus brunneosignatus*), a few have their range extending to the western part (*Lithophilus kozlovi* and *Scymnus mongolicus*) or to the eastern part (*Exochomus mongol* and *Tytthaspis lateralis*). Only two species ranges restricted to western Mongolia (*Exochomus semenovi* and *Spiladelpha barovskii*). There are no endemic species with ranges restricted to eastern Mongolia only.

On the basis of an analysis of the distribution of *Coccinellidae* in Mongolia 4 zoogeographical regions can be distinguished in that area (Fig. 15) They are: I — Orkhon-Selenga-Kobd Region, II — Khangay Region, III — Kerulen Region, IV — Altai-Gobi Region. The following species are characteristic to particular regions: Region I: *Scymnus jakowlewi*, *S. urgensis*, *Hyperaspis asiatica*, *Chilocorus renipustulatus*, *Brumus mongolicus*, *Anisosticta terminassianae*,

http://rcin.org.pl

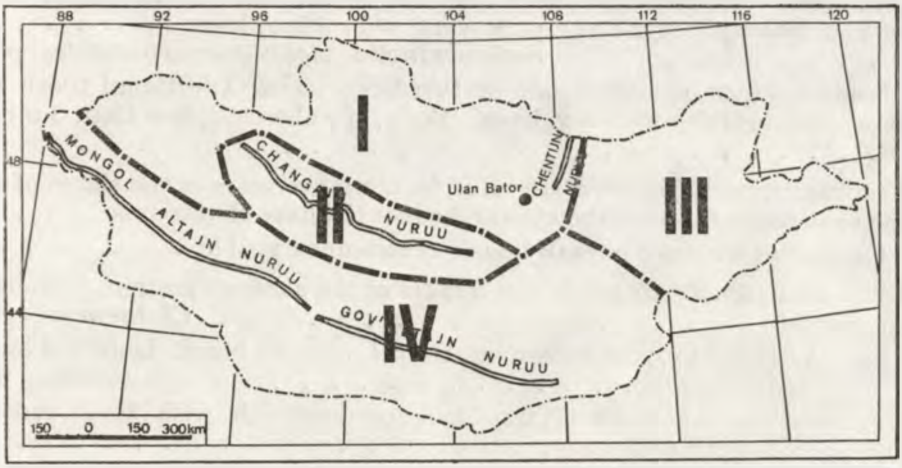


Fig. 15. Zoogeographical division of Mongolia. Regions: I — Orkhon-Selenga-Kobd Region, II — Khangay Region, III — Kerulen Region, IV — Altai-Gobi Region.

Coccinella quinquepunctata, *Neomysia ramosa*, *Calvia quatuordecimguttata*, *Halyzia sedecimguttata*. Region II — *Scymnus changajensis*, *S. nigrinus*, *Hyperaspis leechi*, *Exochomus quadripustulatus*, *Anisosticta strigata*. Region III — *Subcoccinella vigintiquatuorpunctata*, *Coccidula rufa*, *Anisosticta sibirica*, *Thea vigintiduopunctata*. Region IV — *Lithophilus kozlovi*, *L. kiritschenkoi*, *Scymnus obsoletus*, *S. mongolicus*, *S. kaszabi*, *Pharoscymnus brunneosignatus*, *Exochomus kiritschenkoi*, *E. semenovi*, *E. nigromaculatus*, *Brumus octosignatus*, *B. jacobsoni*, *Spiladelpha barovskii*, *Bulaea lichatschovi*, *Coccinula elegantula*, *Synharmonia oncina*.

KEY FOR THE IDENTIFICATION OF MONGOLIAN *COCCINELLIDAE*

1. Second tarsal segment not protracted ventrally. The whole of third segment visible, tarsi distinctly with 4 segments . . . **Lithophilus**, p. 323.
   - A. Body short, strongly convex. Punctures on elytra fairly deep and distinct, large punctures forming rows. Spaces between punctures smooth . . . . *L. kozlovi*, p. 323.
   - —. Body slender, slightly convex. Punctures on elytra quite shallow and not very distinct, larger punctures forming indistinct longitudinal rows. Spaces between punctures rugose . . . . *L. kiritshenkoi*, p. 324.

—. Second tarsal segment protracted ventrally beyond third segment. Third segment hidden in a notch of the second segment and it seems if the tarsi are 3-segmented . . . . 2.

http://rcin.org.pl

2. Mandibles terminating in more than two teeth. Additional tooth at the base of mandibles absent. Body pubescent, over 3 mm long . . . . ***Subcoccinella*** *vigintiquatuorpunctata*, p. 321.
—. Mandibles terminating in one or two large teeth. Additional tooth at the base of mandibles well-developed. Body, if pubescent, less than 3 mm long . . . . 3.
3. Clypeus strongly widened laterally, forming processes in the shape of lamellae that reach far over the eyes and cover the base of antennae . . . . . 4.
—. Clypeus not widened laterally, base of antennae visible . . . . 6.
4. Clypeus distinctly ridged in the middle of the anterior margin. Femoral line incomplete . . . . ***Chilocorus***, p. 366.
   A. Disc of elytra brownish, lateral margins black. Length 6 mm . . . . *Ch. rubidus*, p. 366.
   —. The whole of elytra black or brownish with small red spots. Length to 5 mm . . . . B.
   B. Head black. In the middle of each elytron a round red spot . . . . *Ch. renipustulatus*, p. 367.
   —. Head red or brownish, in the middle of each elytron three or four small spots arranged transversely; these spots may be interconnected in different ways . . . . C.
   C. Length to 4 mm. Punctures on head large, those on pronotum large and closely arranged. Lateral margin of elytra not reflexed. Penis as long as parameres . . . . . . *Ch. bipustulatus*, p. 369.
   —. Length less than 4 mm. Punctures on head small and sparsely arranged. Lateral margin of elytra distinctly reflexed. Penis slightly longer than parameres . . . . . *Ch. geminus*, p. 370.
—. Clypeus not ridged in the middle of the anterior margin. Femoral line complete . . . . 5.
5. Claws with a tooth at base . . . . ***Exochomus***, p. 372.
   A. Elytra black or black with red spots . . . . B.
   —. Elytra reddish with black spots . . . . *E. kiritshenkoi*, p. 378.
   B. Elytra black with red spots . . . . C.
   —. Elytra black with metallic gleam, without spots . . . . . . D.
   C. Humeral spot surrounding humeral tubercle . . . . *E. quadripustulatus*, p. 375.
   —. Humeral spot not surrounding humeral tubercle . . . . *E. mongol*, p. 373.
   D. Elytra with green gleam . . . . *E. semenovi*, p. 372.
   —. Elytra without green gleam . . . . *E. nigromaculatus*, p. 376.
—. Claws without tooth at base . . . . ***Brumus***, p. 379.
   A. Pronotum with 5 black spots. Elytra with 5 black spots each . . . . *B. jacobsoni*, p. 379.
   —. Pronotum with 1 black spot or almost entirely black. Four black spots on each elytron . . . . B.
   B. Head yellow-brownish. Large spots on elytra. Spots 2 and 4 reach

http://rcin.org.pl

the suture and join the opposite spots . . . . *B. mongolicus*, p. 382.

—. Head black. Small spots on elytra. Spots 2 and 4 do not reach the suture; one of the spots may be absent . . . . *R. octosignatus*, p. 381.

6. Upper surface of body and eyes glabrous . . . . 7.

—. Upper surface of body and partly eyes pubescent . . . . 29.

7. Antennae shorter than head. Epipleurae of elytra with deep recesses to receive the ends of second and third femora. Posterior angles of pronotum angular . . . . 8.

—. Antennae longer than head. Epipleurae of elytra without recesses. Posterior angle of pronotum rounded. . . . . 9.

8. Claws with a tooth at base. Elytra black. 1 or 2 spots on each elytron . . . . ***Hyperaspis***, p. 359.

A. On each elytron one spot on the posterior half . . . . *H. asiatica*, p. 359.

—. On each elytron two spots, one on the anterior half, the other on the posterior . . . . *H. leechi*, p. 361.

—. Claws without a tooth at base. Elytra black or light brownish. Each elytron, if black, with three spots, if light brownish, with an irregular dark pattern . . . . ***Oxynychus***, p. 362.

A. Elytra black with 3 yellowish spots . . . . *O. erythrocephalus*, p. 362.

—. Elytra light brownish with an irregular dark pattern . . . . *O. alexandrae*, p. 364.

9. Cylindrical swell forming the so-called ridge on the anterior margin of metasternum runs parallel to the marginal line, but on the process entering between the acetabula of second pair of legs it is removed backwards from that line. Femora of the second and third pair of legs extend beyond the sides of the body . . . . 10.

—. Cylindrical swell forming the so-called ridge on the anterior margin of metasternum runs parallel to the marginal line throughout its length; sometimes this ridge is absent. Femora of the second and third pair of legs not excending beyond the sides of the body . . . . 15.

10. Base of pronotum not ridged . . . . 11.

—. Base o pronotum ridged . . . . 13.

11. Femoral line on first abdominal segment absent . . . ***Hippodamia***, p. 388.

A. Tibiae yellow, only their proximal ends slightly darkened. Anterior margin of pronotum almost straight or very slightly twice sinuately emarginate . . . . *H. tredecimpunctata*, p. 388.

—. Tibiae blackish-brown, only their distal ends sligtly lighter. Anterior margin of pronotum distinctly emarginate twice . . . . *H. septemmaculata*, p. 390.

—. Femoral lines on first abdominal segment present . . . . 12.

12. Claws straight, not dentated, single. Tibiae of second and third pair of legs with one spike at the extremity . . . . ***Anisosticta***, p. 384.

http://rcin.org.pl

A. Body strongly elongate, narrow . . . . *A. terminassianae*, p. 387.
—. Body fairly wide, short . . . . B.
B. On pronotum 6 small spots. Elytra sparsely punctured, sometimes spots confluent but never forming longitudinal bands . . . . *A. sibirica*, p. 384.
—. On pronotum 2 black spots, sometimes confluent. . . . . . .
—. On pronotum 2 black spots, sometimes interconnected. Spots on elytra connected into long bands or elytra almost entirely black . . . . *A. strigata*, p. 385.

—. Claws with a tooth at base. Tibiae of II and III pair of legs with two spikes on the extremity . . . . **Semiadalia** *notata*, p. 396.

13. Elytra whitish-yellow, on each elytron three large black spots, one behind the other . . . . **Aages** *prior*, p. 399.
—. Elytra brownish or yellow with black spots not arranged longitudinally . . . . 14.
14. Claws with a tooth at base. Body slender . . . . **Spiladelpha** *barovskii*, p. 398.
—. Claws with a tooth in the middle. Body short . . . . **Adonia**, p. 391.
A. Anterior half of suture black. Spots on elytra large and, most frequently, almost interconnected into an irregular pattern. Ground-colour of elytra yellow . . . . *A. amoena*, p. 394.
—. Anterior part of suture not black. Spots on elytra small, some of them interconnected. Ground-colour of elytra reddish or brownish . . . . *A. variegata*, p. 392.

15. Mandibles with two teeth, the lower with 3–6 small teeth on underside . . . . 16.
—. Mandibles with two teeth, neither with additional teeth on underside . . . . 18.
16. Anterior margin of pronotum notched, not covering eyes. Ground-colour of elytra lemon with black spots . . . . **Thea** *vigintiduopunctata*, p. 454.
—. Anterior margin of pronotum not notched, covers eyes totally or partly. Ground-colour of elytra orange-yellow or brownish with yellow or whitish spots . . . . 17.
17. Lateral margins of elytra strongly protruding laterally. Eyes entirely covered by anterior margin of pronotum. Eight light spots on each elytron. Length over 5 mm . . . . **Halyzia** *sedecimguttata*, p. 451.
—. Lateral margins of elytra not protruding laterally. Eyes half-covered by anterior margin of pronotum. On each elytron 6 light spots. Length to 4 mm . . . . **Vibidia** *duodecimguttata*, p. 453.
18. Ends of elytra at suture with a notch in which small setae are situated . . . . **Anatis** *ocellata*, p. 449.
—. Ends of elytra at suture straight, without a notch . . . . 19.
19. Tarsal claws not dentate, without additional teeth or lobes . . . . **Bulaea** *lichatschovi*, p. 404.
—. Tarsal claws dentate or with an additional tooth or lobe at base . . . . 20.

http://rcin.org.pl

20. Scutellum very small, almost invisible . . . . ***Tytthaspis***, p. 400.
    A. Spots on elytra in form of small punctures. Length to 3 mm . . . . *T. lateralis*, p. 401.
    —. On each elytron a large oblong spot. Length over 4 mm . . . . *T. trilineata*, p. 402.
—. Scutellum large, distinctly visible . . . . 21.
21. Joints of antennal club closely interconnected; penultimate joint distinctly wider than longer, the anterior margin of the ultimate joint truncate straight . . . . 22.
—. Joints of antennal club loosely interconnected; penultimate joint distinctly longer than wider; if it is wider than the upper margin of the ultimate joint is truncate 26
22. Femoral line on first abdominal segment forming a semicircle. Its arch does not reach to the margin of the posterior segment. Prosternum convex, without costae . . . . ***Adalia***, p. 405.
    A. Lateral margins of elytra and areas around black spots lighter than the ground-colour of elytra, thus forming a kind of halos . . . . *A. frigida*, p. 412.
    —. Lateral margins of elytra and areas around spots the same as ground-colour of elytra . . . . B.
    B. Ground-colour of elytra yellow. Almost the whole suture black . . . . *A. conglomerata*, p. 406.
    —. If the ground-colour of elytra light, the suture never black. Ground-colour may be black . . . . C.
    C. Mesosternal epimera white . . . . . *A. decempunctata*, p. 408.
    —. Mesosternal epimera black . . . . D.
    D. Spots on elytra in three rows. Ground-colour of elytra always light . . . . *A. fasciatopunctata*, p. 410.
    —. Spots on elytra in two rows at most; usually one black spot in the middle of elytron. Ground-colour of elytra may be black with red spots . . . . *A. bipunctata*, p. 409.
—. Femoral line on first abdominal segment forms a quarter of a circle, its convexity reaches or almost reaches the margin of posterior segment and farther on runs parallel to it or disappears. Sometimes femoral line bifurcates when it reaches the anterior margin of the segment. Prosternum flat with costae or without . . . . 23.
23. Anterior mesosternal margin triangularly notched in the middle . . . . 24.
—. Anterior mesosternal margin straight, without a notch in the middle . . . . 25.
24. On prosternal process distinct costae . . . . . . ***Synharmonia***, p. 432.
    A. Elytra pink or red-brownish with black spots . . . . *S. conglobata*, p. 433.
    —. Elytra black with yellow spots . . . . . . *S. oncina*, p. 435.
—. On prosternal process costae absent . . . . . ***Harmonia*** *axyridis*, p. 430.
25. Mesosternal episterna dark: black or blackish-brown . . . . ***Coccinella***, p. 413.

http://rcin.org.pl

A. Mesosternal epimera black . . . . *C. hieroglyphica mannerheimi*, p. 421.

—. Mesosternal epimera white . . . . B.

B. Scutellar black spot in the form of a transverse band joining the opposite spot and extending from one humeral tubercle to the other . . . . C.

—. Scutellar black spot limited only to the area near scutellum, never in the form of a band . . . . D.

C. Spots in the second row on elytron not confluent . . . . *C. transversoguttata*, p. 416.

—. Spots in the second row on elytron confluent . . . .

—. Spots in the second row confluent, forming one large transverse spot . . . . *C. trifasciata*, p. 423.

D. On elytral apex there is a spot situated closer to the suture than to the lateral margin . . . . E.

—. The above spot on elytral apex absent. . . . . F.

E. Elytral spots at suture larger than the others. Body almost circular . . . . *C. tianshanica*, p. 418.

—. Spots at suture not larger than the others, or only slightly larger. Body oval . . . . *C. undecimpunctata*, p. 426.

F. On each elytron, apart from the scutellar spot, 2, 3, or 5 spots . . . . G.

—. On each elytron 4 spots . . . . *C. divaricata*, p. 424.

G. Elytra dull. Spot at mid-length of elytra transverse, extending slightly diagonally from lateral margin to suture . . . . *C. withi*, p. 415.

—. Elytra shiny. Spot at mid-length of elytra circular or almost circular . . . . H.

H. Metasternal epimera black. Length over 6 mm. On each elytron, apart from scutellar spot, 3 spots . . . . *C. septempunctata*, p. 414.

—. Metasternal epimera white. Length to 5 mm. On each elytron, apart from acutellar spot, 5 spots . . . . *C. quinquepunctata*, p. 420.

—. Metasternal episterna light: yellow or white yellow . . . . **Coccinula**, p. 427.

A. Ground-colour of elytra black with 7 yellow spots on each . . . . *C. quatuordecimpustulata sinensis*, p. 427.

—. Ground-colour of elytra yellow with black or dark-brownish spots . . . . *C. elegantula*, p. 429.

26. Tarsal claws with an additional tooth in the middle . . . **Neomysia**, p. 446.

A. Elytra brownish-yellow with 6–7 elongate whitish spots. Spots frequently confluent or obliterate, sometimes indiscernible, blending into the ground. . . . . *N. oblongoguttata*, p. 446.

—. Elytra black, seldom brownish, with yellow lateral margin and suture and two longitudinal bands, the internal one always con-

http://rcin.org.pl

nected with the light colour of the suture; they are always distinct . . . . *N. ramosa*, p. 448.

—. Tarsal claws with an additional tooth or lobe at base . . . . 27.

27. Mesosternum with a deep notch at middle of anterior margin . . . . . 28.

—. Mesosternum without a deep notch at middle of anterior margin . . . . ***Myrrha*** *octodecimguttata*, p. 436.

28. Elytra yellow with black angular spots that may be confluent so that elytra look black with yellow spots. The whole or almost the whole underside of body black. Terminal joint of antennae semicircular at apex . . . . ***Propylaea*** *quatuordecimpunctata*, p. 444.

—. Elytra yellowish-brown, orange or testaceous with yellowish-white circular spots; if spots black, they are circular, and ground-colour of elytra red. Underside of body light or dark brownish. Terminal joint of antennae truncate at apex . . . . ***Calvia***, p. 438.

A. Elytra red with black spots . . . *C. duodecimmaculata*, p. 438.

—. Elytra light brownish or yellowish-brown with whitish spots . . . . B.

B. On elytra 10 light spots . . . . . . *C. decemguttata*, p. 440.

—. On elytra more than 10 light spots . . . . C.

C. On each elytron, in the second row of spots, three spots arranged in a line . . . . *C. quatuordecimguttata*, p. 443.

—. On each elytron, in the second row, two spots with the side one slightly removed anteriorly . . . . *C. quindecimguttata*, p. 441.

29. Antennae long, reaching to the middle of lateral margin or hind angles of pronotum. Eyes coarsely faceted . . . . ***Coccidula***, p. 326.

A. On elytra one common black spot behind middle . . . . *C. reitteri*, p. 326.

—. On elytra no common spot, elytra unicoloured, brownish-red or yellowish-red . . . . *C. rufa*, p. 328.

30. Terminal palpus securiform . . . . 31.

—. Terminal palpus conical, acute at apex . . . . ***Pharoscymnus*** *brunneosignatus*, p. 365.

31. Pubescence at suture before elytral apex directed posteriorly, parallel to suture . . . . ***Stethorus*** *punctillum*, p. 329.

—. Pubescence at suture before elytral apex directed diagonally, from suture towards margins . . . . ***Scymnus***, p. 330.

A. Femoral line on first abdominal segment forms a semicircle with its external side reaching to anterior margin of segment and then the semicircle is full and closed or to lateral margin, but then it may dissapear at the very margin . . . . B.

—. Femoral line on first abdominal segment not forming a full semicircle and its external side does not reach to any margin of the segment . . . . F.

B. Femoral line on first abdominal segment reaching to lateral margin of segment or disappears just before it, does not reach to anterior margin, at best it only runs towards the angle formed by anterior and lateral margins of the segment (the only species of

http://rcin.org.pl

this subgenus found in Mongolia has on each elytron two spots, neither reaching to any of the margins). (Subgenus *Sidis*) . . . . *S.* (*Sidis*) *obsoletus*, p. 337.

—. Femoral line on first abdominal segment always reaching anterior margin of segment. (Subgenus *Pullus*) . . . . C.

C. Elytra yellow-brownish with usually 5 small black spots . . . . *S.* (*P.*) *mongolicus*, p. 332.

—. Elytra black, brownish-red or yellowish-brown without small black spots . . . . D.

D. Elytra black, only their apices yellow-red; light colour on elytral apices covers a small area . . . . *S.* (*P.*) *ferrugatus*, p. 331.

—. Elytra brownish-red or yellow—brownish with black lateral margins, base and suture, or black (in the last case one-third of posterior part of elytra is brownish-red) . . . . E.

E. Pronotum black or, most frequently, with anterior angles brownish. Femoral line reaches to two-thirds of the length of segment. Femora black. Elytra brownish-yellow, only base, suture and lateral margins to two-thirds of length or almost to very apices, black . . . . *S.* (*P.*) *suturalis*, p. 334.

—. Pronotum red-brownish or with a large spot reaching the base. Arch of femoral line reaching to half of the length of segment. Femora brownish. Elytra red-brownish with base, suture or lateral margins to two-thirds of length black or, if all black one—third of posterior part of elytra red-brownish . . . . *S.* (*P.*) *urgensis*, p. 335

F. Prosternal process without costae (subgenus *Nephus*). . . . . G.

—. Prosternal process with two costae (subgenus *Scymnus*) . . . . J.

G. Elytra black or black-brownish with one—third of anterior part brownish-yellow, without spots . . . . . *S.* (*N.*) *spilotus*, p. 353.

—. Elytra black or black-brownish with a large spot covering the middle of elytral disc, or with a small spot in the posterior half . . . . H.

H. Elytra with a large, elongate yellowish-brown spot covering the middle of elytral disc . . . . *S.* (*N.*) *incinctus*, p. 354.

—. Elytra with a circular or slightly broadened transversely spot situated in the posterior half . . . . I.

I. Spot in the posterior half of elytra virtually at the same distance from suture and lateral margin . . . . *S.* (*N.*) *bipunctatus*, p. 356.

—. Spot in the posterior half of elytra closer to suture than to lateral margin . . . . *S.* (*N.*) *changajensis*, p. 357.

J. Elytra brownish or brownish with a black pattern . . . . . . K.

—. Elytra black or black with red spots . . . . L.

K. Elytra totally brownish . . . . . . *S.* (*S.*) *abietis*, p. 340.

—. Elytra brownish with a black pattern . . . . *S.* (*S.*) *kaszabi*, p. 352.

L. Elytra all black . . . . *S.* (*S.*) *nigrinus*, p. 339.

—. Elytra black with reddish spots . . . . M

http://rcin.org.pl

M. On each elytron one spot . . . . N.
—. Elytra with two spots each . . . . O.
N. Spot in the posterior half of elytra not reaching any margins . . . . *S.* (*S.*) *jakowlewi*, p. 350.
—. Spot in the anterior half reaching to the lateral margin . . . . S. (*S.*) *interruptus*, p. 349.
O. On elytra anterior spot always reaching the lateral margin, posterior one reaching to it very often . . . . P.
—. Spots on elytra not reaching lateral margins . . . . Q.
P. Penis recurvated at apex, siphon without a hooked process . . . . *S.* (*S.*) *manipulus*, p. 341.
—. Penis straight at apex, siphon with a small hooked process . . . . *S.* (*S.*) *bogdoensis*, p. 344.
Q. Penis greatly widened at base . . . *S.* (*S.*) *frontalis*, p. 343.
—. Penis not widened at base . . . . R.
R. Penis slightly longer than parameres, broad when viewed from below, about twice as long as wide . . . . *S.* (*S.*) *inderihensis*, p. 347.
—. Penis distinctly longer than parameres, narrow when viewed from below, about three times as long as wide. . . . . *S.* (*S.*) *doriai*, p. 346.

REVIEW OF SPECIES

Epilachninae

Subcoccinella Hub.

This genus includes only two species, one of which has also been recorded in Mongolia.

Body pubescent. Antennae 11-jointed, terminating in a club and inserted between mandibular base and eyes. Mandibles with more than two teeth at apex, tooth at base absent.

Species belonging here are phytophagous and in some countries they are pests of papilionaceous cultivated plants, in Europe mainly on alfalfa. They also live on wild papilionaceous plants and on *Chaenopodium*.

Subcoccinella vigintiquatuorpunctata (L.)

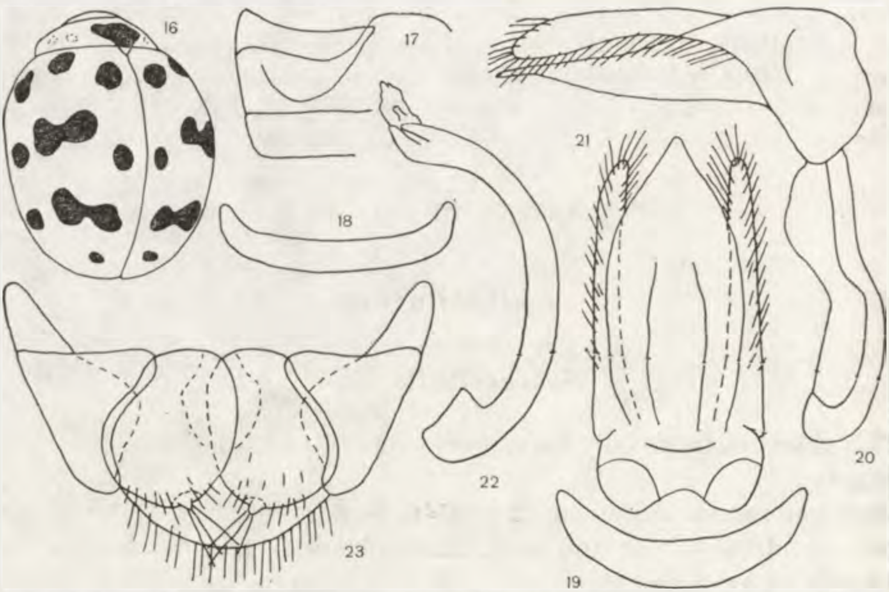
Body strongly convex of almost circular shape, pubescence fine. Upper surface of body reddish-brown or yellowish. Head may be evenly darkened at back. On pronotum three black spots, the middle one the largest; sometimes lateral spots indistinct or they fade away entirely. Scutellum brownish

http://rcin.org.pl

or black. On elytra 24 spots (Fig. 16). The spots may be confluent or fading. In the Mongolian specimens elytra with 11 or 12 spots on each. There are forms with interconnections between spots 5, 8, 9 and 10, or between 11 and 12, or spots are connected in pairs — 5 and 6, and 9 and 10.

Punctures on head fairly large and closely arranged. Punctures on pronotum slightly larger than on head, also arranged closely, areas between them shiny. Elytra closely punctured with large punctures, the areas between punctures with fairly distinct microsculpture in the form of irregular lines.

Anterior angles of pronotum broadly rounded and produced cephalad. Posterior angles almost straight. Anterior margin straight. Lateral margins of pronotum straight. Lateral margins ridged narrowly, not reflexed. Humeral tubercles large but faintly marked. Lateral reflexions of elytra very narrow. Claws bifid without a tooth at base. Femoral line incomplete (Fig. 17), its arch extending beyond three-fourths of length of segment. In male the last sternite short (Fig. 18), very feebly curved, the tergite with posterior margin



Figs. 16–23. *Subcoccinella vigintiquatuorpunctata* (L.). 16 — outline and pattern of the body; 17 — femoral line; 18 — last sternite of male; 19 — last sternite of female; 20–21 — male genitalia; 22 — siphon; 23 — female genitalia.

very feebly arcuate. In female the last sternite (Fig. 19) quite strongly curved with apices almost acute, tergite with posterior margin arcuate and with basal processes short and narrow.

Length 3–4 mm.

Male genitalia and siphon given in Figs. 20–22. Penis 0.48 mm long, the greatest width, when viewed from below, is 0.24 mm. Siphon short and massive, with a feebly sclerotized siphonal bursa.

http://rcin.org.pl

Female genitalia as in Fig. 23. Genital plate 0.28 mm long, its greatest width 0.24 mm.

The only representative of the phytophagous subfamily of the *Coccinellidae* in Mongolia. Found on herbaceous plants, in a coniferous forest and in open meadow-like wet areas. In Mongolia the species is not considered to be a pest of cultivated plants.

Lithophilinae

Lithophilus FRÖHL.

The genus includes a great number of species occurring mainly in the basin of Mediterranean Sea. In Mongolia only two species have been recorded so far.

Body pubescent. Second tarsal joint not elongate, the third one clearly visible. Antennae 10-jointed. Elytra accreted at suture, wings absent.

The systematic position of this genus within the *Coccinellidae* is not clear. It is now accepted that it forms a separate subfamily. Representatives of this genus live underground. On the basis of the structure of mandibles they are assumed to be predaceous. Biology not know at all. They occur mainly in xerothermic areas, territories of particular species greatly restricted (KAPUR 1948).

Lithophilus kozlovi BAR.

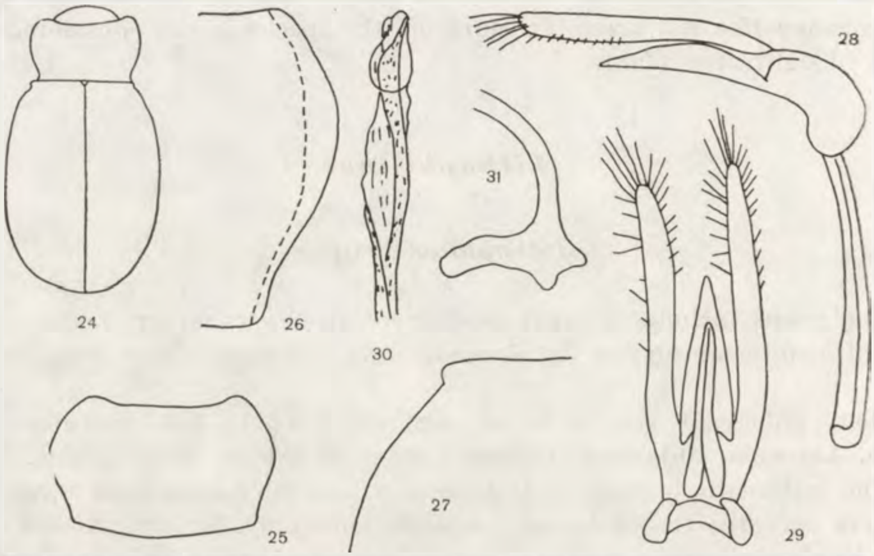
Body strongly convex in the form of a broad oval (Fig. 24). Head, pronotum and legs orange brownish. Elytra brownish with lighter sides and posterior part, particularly at sides. Median part of lateral margins, for one-third of length, of the same colouration as elytral disc. Elytral base and suture slightly darkened, darker than disc. Underside of body brownish, with prosternum and elytral epipleurae, light.

Head closely punctured with distinct, fairly large punctures, separated by less than half of their diameter. Pronotal punctures large, smooth and closely arranged, areas between them shining. Punctures on elytra large and small. Large punctures, particularly at suture, demonstrate a tendency to be arranged in longitudinal rows. At lateral margins punctures are few and fading away. Areas between small punctures usually larger than their diameter. Areas between punctures shining.

Anterior angles of pronotum rounded (Fig. 25), slightly protruding, but the outline of anterior margin is fairly deep. Posterior angles acute, produced. Lateral margin of pronotum slightly notched at base. Lateral pronotal ridge broad, but low, narrower at notch (Fig. 26). Pubescence on pronotum golden,

http://rcin.org.pl

at middle darker, almost rufous. Humeral angles of elytra (Fig. 27) clearly prominent, acute. Lateral reflexion of elytra very narrow. Elytra broadly rounded at apex. Pubescence fairly long, golden, thick and adpressed.



Figs. 24–31. *Lithophilus kozlovi* Bar. 24 — outline of body; 25 — pronotum; 26 — lateral margin of pronotum; 27 — humeral angle of elytra; 28–29 — male genitalia; 30 — apex of siphon; 31 — siphonal sack.

Femoral line in the form of a short, almost straight line running obliquely from the process to the lateral margin, terminating just before mid-length of segment. On the lateral part of segment, near anterior margin, there is a vestige of femoral line. Clawsof the first pair of legs with a fairly long additional tooth, with its base inserted slightly below half length of the main claw. In male the last sternite with lateral margin almost straight, last tergite with anterior margin evenly arcuate.

Length 4.7 mm.

Male genitalia, siphonal apex and siphonal sack as in Figs. 28–31.

This species is close to *Lithophilus kiritschenkoi* (Biel.) and the differences between them are given in the description of the latter.

L. kozlovi is an endemic species and its territory is restricted to southern Mongolia. It lives underground, found at the roots of *Caragana*.

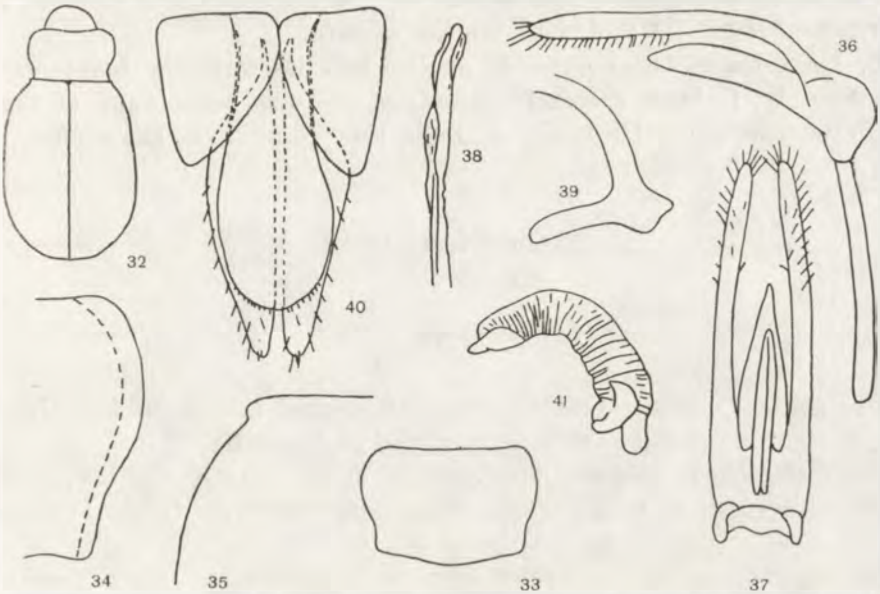
Lithophilus kiritschenkoi (Biel.)

Body moderately convex in the form of an elongate oval (Fig. 32). Body brownish, head and legs slightly darker. Elytra black brownish with a lighter band in the middle of each, the band is closer to lateral margin than to suture,

http://rcin.org.pl

widens at humeri and reaches lateral margin, widening at apex. The band sometimes indiscernible, blending into ground-colour of elytra.

Punctures on head quite large, with intervals between them less than half of their diameter. Pronotal punctures large, arranged very closely. Areas smooth. Elytral puncturation indistinct, consisting of very shallow large punctures and of very small ones. Large punctures arranged irregularly, forming rows only in some places and over small sections. Small punctures arranged sparsely. Areas between punctures strongly rugose, with various types of irregular lines.



Figs. 32–41. *Lithophilus kiritshenkoi* (BIEL.). 32 — outline of body; 33 — pronotum; 34 — lateral margin of pronotum; 35 — humeral angle of elytra; 36–37 — male genitalia; 38 — apex of siphon; 39 — siphonal sack; 40 — female genitalia; 41 — receptaculum seminis.

Anterior pronotal angles rounded (Fig. 33), faintly produced, outline of anterior margin in the form of a flat arch. Posterior angles acute and produced. Lateral margin of pronotum (Fig. 34) curved at an angle at mid-length and farther quite strongly curved towards the base. Lateral ridge broad in anterior half, narrow in posterior. Pubescence on pronotum rufous. Humeral angles of elytra clearly produced, not rounded (Fig. 35). Lateral reflexion of elytra narrow and directed slightly under the body. Elytra broadly rounded posteriorly. Pubescence rufous, quite long, adpressed.

Femoral line in the form of two very short ribs. Internally it is in the form of an almost straight line extending to one-third of length of segment, externally in form of a vestige at anterior margin. Claws on the first pair of legs with a big (in male) or a small (in female) tooth at base. In male last sternite

http://rcin.org.pl

with posterior margin almost straight and tergite arcuate. In female last sternite and tergite with posterior margin regularly arcuate.

Length 2.8–4.2 mm.

Male genitalia, siphonal apex and siphonal sack as in Figs. 36–39.

Female genitalia and receptaculum seminis as in Figs. 40–41.

This species differs quite clearly from *L. kozlovi* in shape of body, in elytral puncturation and in pubescence. In *L. kozlovi* the body is robust, broadly oval and more convex, in *L. kiritschenkoi* it is more slender and flat. In *L. kozlovi* the punctures are deep and clear, the large ones arranges in distinct longitudinal rows. In *L. kozlovi* areas between punctures are smooth and shining, and in *L. kiritschenkoi* rugose and with microsculpture.

L. kiritschenkoi is an endemic species and its territory covers southern Mongolia only. It leads a secretive mode of life, has been found at the roots of or in detritus under *Caragana*. At night they come up to the surface.

Coccinellinae

Coccidula Gyll.

The genus *Coccidula* Gyll. includes 9 species known so far; five occur in the Palaearctic and 2 have been recorded in Mongolia.

Body flattened, elongate, pubescent. Eyes coarsely faceted. Antennae very long, consisting of 11 joints. Mandibles with two teeth. Femoral line complete.

Representatives of this genus may occur in two entirely different habitats — humid and xerothermic. They feed only on herbaceous plants or on soil.

In external appearance species from the genus *Coccidula* Gyll. resemble representatives of *Lithophilus* Fröhl.

Coccidula reitteri Dodge

The species was described by Reitter (1897) from Transbaicalia under the name *Coccidula suturalis*. Since the name was preoccupied, Dodge (1938) changed it into *C. reitteri*.

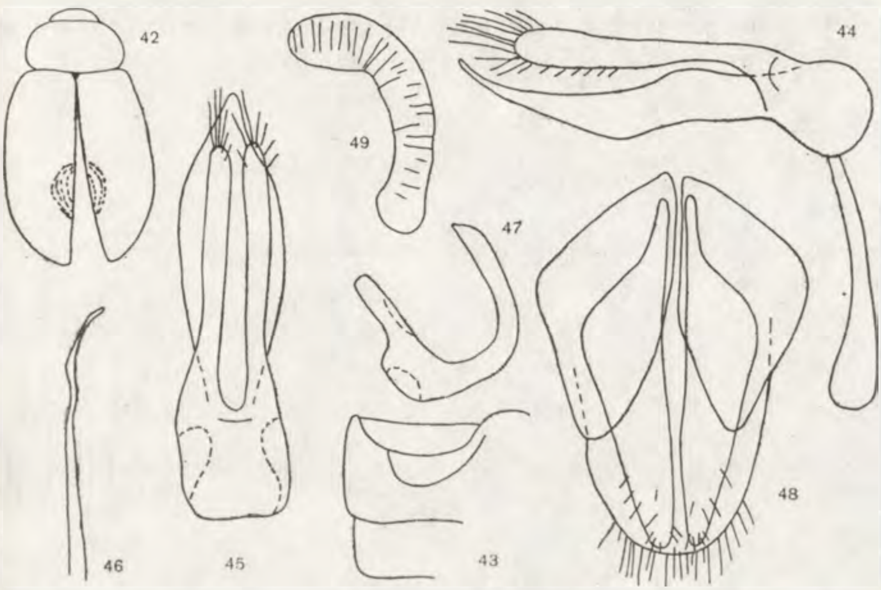
The description given below is based on specimens from Reitter's collection from the Natural History Museum in Budapest.

Body poorly convex, elongate. Head, pronotum und legs light yellow. Scutellum black. Elytra brownish with base and with sides and suture in anterior half, lighter. At the suture in the posterior half of elytra, closer to middle than to apex, there is a strong darkening (Fig. 42) that is dark brownish in

http://rcin.org.pl

one specimen and almost black in the other. Meso- and metasternum black. First three abdominal segments black at middle and dark yellow at sides. The other segments dark yellow.

Punctures on pronotum quite small, sparsely arranged, so that inrevals between them are almost as long as their diameter. Elytral punctures large and small. The large ones sparsely arranged, forming indistinct rows. Small punctures arranged densely, so that the intervals between them are less than half of their diameter.



Figs. 42–49. *Coccidula reitteri* Dod. 42 – outline and pattern of body; 43 – femoral line; 44–45 – male genitalia; 46 – apex of siphon; 47 – siphonal sack; 48 – female genitalia; 49 – receptaculum seminis.

Lateral reflexions of pronotum broad and distinct. Anterior angles acute and produced. Lateral reflexion of elytra indistinct. Arch of femoral line (Fig. 43) extends to almost mid-length of segment.

Length 3 mm.

Male genitalia, siphonal apex and sack are given in Figs. 44–47.

Female genitalia and receptaculum seminis as in Figs. 48–49.

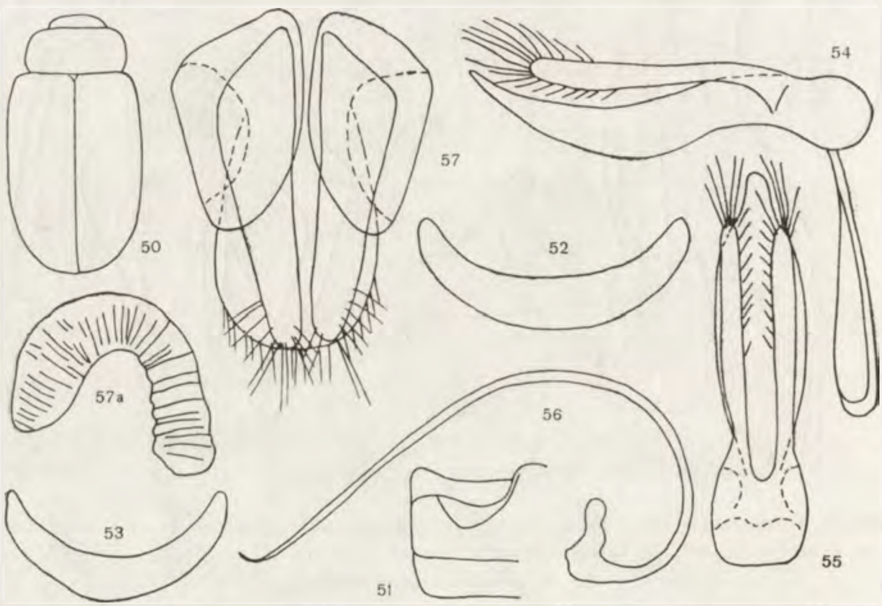
In external appearance this species closely resembles *C. rufa*. Among other characters, it differs from the other *Coccidula* species in the presence of a darkening or a spot on posterior half of elytra and in the penis which is broader when seen from above. Moreover, in lateral view, the shape of penis in *C. reitteri* is slightly different than that in *C. rufa*.

http://rcin.org.pl

Coccidula rufa (Hbst.)

Body moderately convex in the form of a strongly elongate oval (Fig. 50). Upper surface of body and legs dark red-rufous. Underside of body mostly black, but prosternum, terminal segments of abdomen and epipleurae, rufous.

Punctures on head large and arranged closely. Areas between them shining. Pronotal punctures of similar size as those on head, with intervals less than half of their diameter. Areas between the punctures smooth. Puncturation on elytra consisting of few, sparsely scattered very large punctures and of very numerous small ones. Large punctures arranged in not very distinct rows. Intervals between particular small punctures are less than half of their diameter. Areas between punctures covered with irregular hatches.



Figs. 50–57. *Coccidula rufa* (Hbst.). 50 — outline of body; 51 — femoral line; 52 — last sternite of male; 53 — last sternite of female; 54–55 — male genitalia; 56 — siphon; 57 — female genitalia; 57a — receptaculum seminis.

Anterior pronotal angles broadly rounded, not produced cephalad, the posterior ones acute, directed caudad. Anterior margin of pronotum in the form of an even arch. Lateral reflexions of pronotum distinct and quite wide. Humeral tubercles on elytra big, but feebly produced. Lateral reflexion of elytra fairly broad and distinct. Arch of femoral line (Fig. 51) extending to half the length of segment. In male the last sternite (Fig. 52) lunulate with posterior margin evenly arcuate; last tergite with basal processes short but wide, and posterior margin arcuate. In female last sternite (Fig. 53) and tergite with posterior margin evenly arcuate.

http://rcin.org.pl

Length 2.5–3.0 mm; in specimens from Mongolia 2 mm.

Male genitalia and siphon presented in Figs. 54–56.

Female genitalia and receptaculum seminis (on the basis of a specimen from Europe) is given in Figs. 57–57a.

Up till now, only one specimen of this species has been found in Mongolia. It differs slightly from European specimens, viz., it is slightly smaller and darker-coloured. Male genitalia and other characters are in accordance with characters of European specimens.

Representatives of this species live on herbaceous plants in humid habitats.

Stethorus Ws.

Body oval or circular, very small. Body usually entirely black with the mouthparts and legs lighter. Antennae short. Terminal joint of mandibular palpi elongate. Elytra at base as broad as pronotum. Body all pubescent, on posterior half of elytra the pubescence is directed backwardly. Claws bifid.

The genus is fairly rich in species occurring mainly in the Old World. In Mongolia only one species has been recorded.

Stethorus punctillum Ws.

The territory of this species extends from Europe to Korea.

Body moderately convex in the form of a short oval (Fig. 58). Body all black except for antennae, labrum, mouthparts, tibiae, femoral apices and tarsi, which are brownish.

Punctures on head small, sparsely arranged, more frequent at lateral margin. Pronotal punctures large and densely arranged, areas between them smooth. Elytral punctures fairly big, deep and densely arranged, areas between them virtually smooth, only at the edges of punctures there are some irregular scratches.

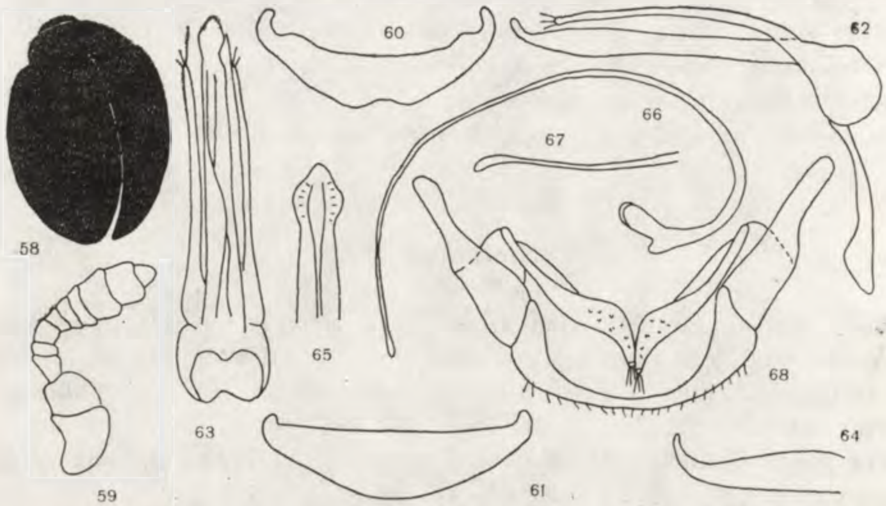
The first two joints of antennae (Fig. 59) big, wide. Third joint as long as two succeeding ones. Last joint small. Anterior pronotal margin strongly arcuate. Lateral margins almost straight, not reflexed, finely ridged. Lateral margins of elytra finely ridged only in the anterior half. Humeral tubercles distinct, at equal distance from anterior and lateral margins. Femoral line complete, its arch reaching almost to mid-length of segment. In male last sternite (Fig. 60) with posterior margin slightly notched and apices hooked. In female last sternite (Fig. 61) with posterior margin feebly arcuate. Spiculum gastrale 0.36 mm long.

Length 1.3–1.5 mm.

Male genitalia as in Figs. 62–67. Penis slightly longer than parameres, in lateral view almost straight, slightly widened before apex, apex narrow and

http://rcin.org.pl

curved rapidly. When viewed from below, it is widened, lancet-like at apex. Penis 0.3 mm long, 0.03 mm wide in lateral view, and 0.025 mm at base when viewed from below. Siphon very long, slender, strongly convex, slightly widened at apex.



Figs. 58–68. *Stethorus punctillum* Ws. 58 – outline and pattern of body; 59 – antenna; 60 – last sternite of male; 62–63 – male genitalia; 64 – end of penis, lateral view; 65 – end of penis, ventral view; 66 – siphon; 67 – apex of siphon; 68 – female genitalia.

Female genitalia (Fig. 68). Genital plates placed obliquely, narrow, slightly curved S-like. Genital plate 0.17 mm long, the greatest width 0.03 mm. Receptaculum seminis reduced.

The species is close to *S. japonicus* Kamiya – occurring in Japan and to *S. aptus* Kapur – occurring in China. It differs from them by the apex of penis which is feebly arcuate in the two species and strongly hook-like in *S. punctillum*. Nothing is known about the bionomy of this species in Mongolia; it probably lives on decidous trees, just as in Europe.

Scymnus Kugel.

The genus comprises a great number of species; out of the 19 species so far recorded from Mongolia, five have territories restricted to Mongolia only.

Species included here are small and relatively difficult to determine. In many cases the characters of genitalia are most significant in deciding to which a given specimen belongs.

Upper surface of body pubescent, pubescence arranged variously in particular species or groups of species, but at suture in the posterior half of elytra it is always directed towards the sides. Antennae short. Tarsal claws at base

http://rcin.org.pl

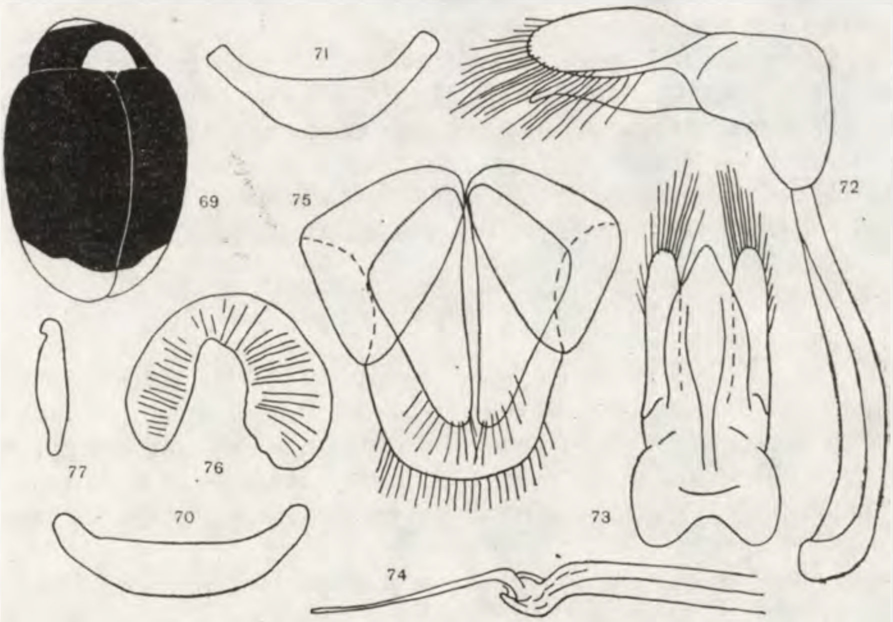
with a widening formed by a shorter or longer acuminate tooth. Pronotum narrowing anteriorly. Femoral line well-developed.

The genus includes four subgenera, by some authors considered to be separate genera.

Scymnus (*Pullus*) *ferrugatus* (MOLL.)

Mongolian specimens are identical with European ones. In Japan the species forms the race *Scymnus* (*Pullus*) *ferrugatus japonicus* Ws. (WEISE, 1879) differing from the typical form by the pronotal spot which is greatly enlarged and reaches the lateral margin.

Body moderately convex in the form of an oval. Head orange-brownish. Pronotum orange-brownish with a black triangular spot at the base in front of scutellum. The spot reaches to mid-length of pronotum. Elytra black with the last one-fifth orange-brownish (Fig. 69). Legs orange-brownish. Underside of body black except for prosternum, pronotal epipleurae and the last four segments of abdomen which are orange-brownish. Elytral epipleurae black.



Figs. 69–77. *Scymnus* (*P.*) *ferrugatus* (MOLL.). 68 — outline and pattern of body; 70 — last sternite of male; 71 — last sternite of female; 72–73 — male genitalia; 74 — apex of siphon; 75 — female genitalia; 76 — receptaculum seminis; 77 — infundibulum.

Punctures on head large and densely arranged, areas between them smooth. Punctures on pronotum of similar size as those on head, but arranged more sparsely. Areas between punctures with few irregular scratches usually situated

http://rcin.org.pl

at punctures. Elytral puncturation consists of large punctures only, intervals between them less than their diameter. Areas between punctures with distinct microsculpture in the form of irregular interconnected scratches.

Fore and posterior angles of pronotum broadly rounded, not produced. Anterior margin straight. Pronotal sides almost straight. Pubescence on pronotum and on elytra silvery. Humeral tubercles large and strongly protruding. Lateral reflexion of elytra very narrow and feebly marked. Prosternal costae parallel and reaching almost to the very anterior margin. Arch of femoral line reaching to five-sixth of the length of segment. In male last sternite (Fig. 70) feebly convex with posterior margin arcuate, last tergite long with short and narrow basal processes. In female last sternite (Fig. 71) fairly strongly convex, narrow at sides, tergite long with small basal processes.

Length 2.5–3 mm.

Male genitalia and siphonal apex given in Figs. 72–74. Penis 0.2 mm long, 0.1 mm wide when viewed from below. The greatest width of parameres when viewed laterally is 0.08 mm.

Female genitalia, receptaculum seminis and infundibulum as in Figs. 75–77. Genital plate 0.33–0.38 mm long, its greatest width 0.1–0.13 mm. Infundibulum 0.1 mm long.

Only once has this species been found in Mongolia in large numbers. It occurred in a humid habitat on the river Tol whose banks were overgrown by thick osier-beds, *Crataegus* and separate hagberries. The greatest numbers were collected on blossoming hagberries that were strongly invaded by the aphids *Rhopalosiphum padi* (L.) and also on *Crataegus* sp. with great numbers of *Psylla melanoneura* Först. (Klimaszewski 1963).

Scymnus (*Pullus*) *mongolicus* Ws.

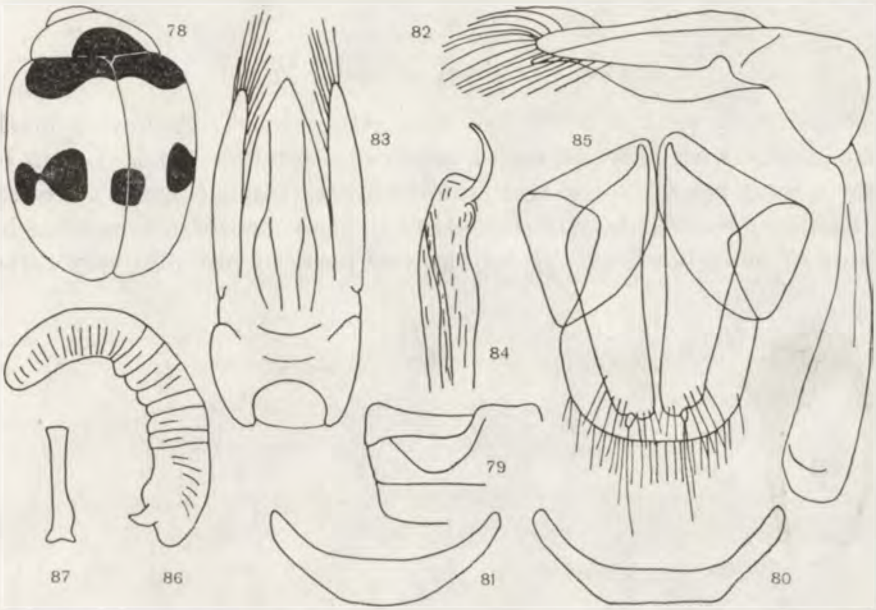
Scymnus (*Pullus*) *mongolicus* Ws. was described by Weise (1890) from Central Mongolia. Further data concerning this species are to be found only in general catalogues with no details on distribution or morphology. Mader (1955) gave a description of this species in his monograph, but he repeated it after Weise (1890). The most recent data on recording this species have been given by Bielawski (1968b).

Body moderately convex in the form of a broad oval. Head yellow-brownish. Pronotum yellow-brownish, with a large black spot in the middle at base. The spot reaches to or slightly exceeds mid-length of pronotum. Scutellum black. Elytra yellow-brownish with black spots (Fig. 78). Humeral spot large, reaching to elytral base and widely or narrowly blending into scutellary spot. At little more than mid-length of elytra the spots are arranged in a row. External and median spots are interconnected, spot at suture is connected with the opposite spot. The spot may partly obliterate and then only a darkening is present. Legs yellow-brownish. Underside of body black, only prosternal sides

http://rcin.org.pl

and last abdominal segment brownish. Pronotal and elytral epipleurae brownish-yellow.

Punctures on head small, sparsely arranged, areas smooth. Punctures on pronotum small, sparsely arranged so that intervals between them are more than their diameter. Areas covered with irregular scratches arranged mainly at punctures. Elytral punctures small, shallow, hardly discernible, distributed sparsely, areas covered with irregular scratches.



Figs. 78–87. *Scymnus* (*P.*) *mongolicus* Ws. 78 — outline and pattern of body; 79 — femoral line; 80 — last sternite of male; 81 — last sternite of female; 82–83 — male genitala; 84 — apex of siphon; 85 — female genitalia; 86 — receptaculum seminis; 87 — infundibulum.

Anterior angles of the pronotum somewhat rounded, slightly produced anteriorly. Hind angles obtuse, somewhat rounded. Anterior margin straight. Lateral margins slightly arcuate. Lateral ridge of pronotum distinct and widened in the posterior part. Humeral tubercles large, but feebly indicated. Lateral borders of elytra ridged with a narrow ridge only, not prominent. Claws with a small tooth at mid-length. Prosternal costae convergent, reaching to the anterior margin. Arch of femoral line (Fig. 79) reaching to four-fifths of the length of segment. In male last sternite (Fig. 80) short with sides strongly elongated and posterior margin straight, tergite long with basal processes narrow and short. In female (Fig. 81) last sternite is convex with the apices almost acute, tergite with posterior margin strongly arcuate.

Length of male 2 mm, of female 2.4 mm.

Male genitalia and siphonal apex as in Figs. 82–84. Penis 0.28 mm long,

http://rcin.org.pl

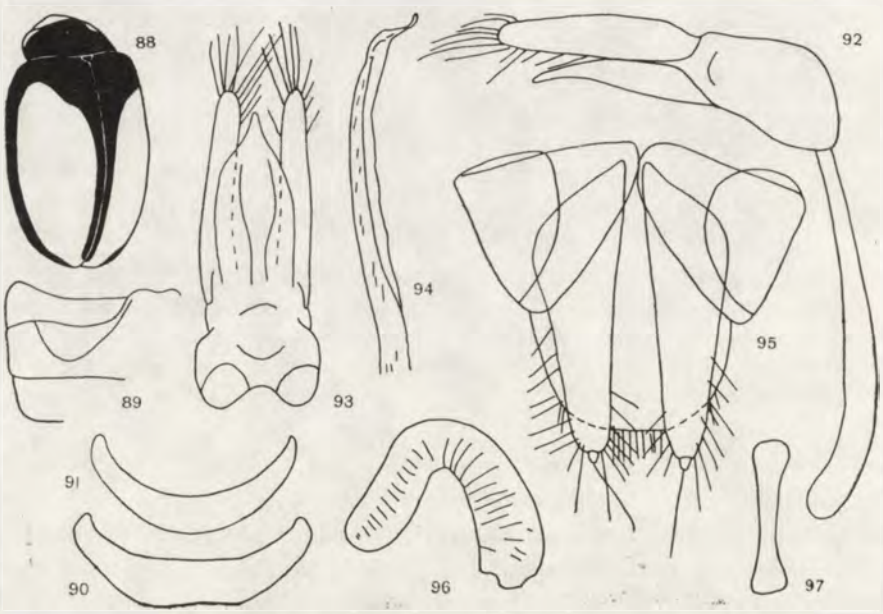
the greatest width 0.09 mm in lateral view and 0.11 mm in ventral view. Siphonal end with a large tooth at the apex.

Female genitalia, receptaculum seminis and infundibulum as in Figs. 85–87. Genital plate 0.32 mm long, 0.1 mm wide at most, infundibulum 0.09 mm long. Two small processes at the sides of the base of receptaculum seminis.

Endemic species, most probably halophilous. Collected near the left branch of the river Bulgan gol, beside large dunes overgrown with *Tamarix*, *Haloxylon* and *Ephedra*, in a large saline syncline without outflow, with rich vegetation on the bank.

Scymnus (*Pullus*) *suturalis* Thnbg.

Body slightly convex of elliptic form. Head black. Pronotum black, but most frequently with anterior angles brownish. Scutellum black. Elytra brownish-yellow with base, suture and lateral borders black (Fig. 88). Elytral disc in the posterior part slightly darkened. Legs black or tibiae somewhat lighter. Underside of body black except for anterior parts of pronotal epipleurae.



Figs. 88–97. *Scymnus* (*P.*) *suturalis* Thnbg. 88 — outline and pattern of body; 89 — femoral line; 90 — last sternite of male; 91 — last sternite of female; 92–93 — male genitalia; 94 — apex of siphon; 95 — female genitalia; 96 — receptaculum seminis; 97 — infundibulum.

Punctures on head fairly large, closely arranged, areas shining. Pronotal punctures slightly smaller than those on head, but more closely arranged, areas smooth. Elytral puncturation consists of large and small punctures closely arranged. Large punctures evenly distributed over the whole area. Areas

http://rcin.org.pl

between punctures with few irregular scratches situated mainly at punctures. Elytra shining.

Pronotal anterior and posterior angles rounded. Anterior border slightly reflexed anteriorly. Lateral borders slightly arcuate in the anterior half, straight in the posterior one. Lateral ridge of pronotum distinct and quite wide. Humeral tubercles large and protruding quite distinctly. Elytral lateral margins finely ridged, somewhat inflexed so that they are invisible when viewed from above. Pubescence of the upper surface of body dense and prominent. Claws with a small tooth at middle. Arch of femoral line (Fig. 89) reaching to two-thirds of the length of segment. In male (Fig. 90) last sternite feebly convex with posterior margin somewhat notched, tergite quite long with posterior margin evenly arcuate. In female (Fig. 91) last sternite strongly lunulate with posterior margin almost semicircular, tergite with posterior margin somewhat inflexed, arcuate at mid-width.

Length 1.8 mm.

Male genitalia and siphonal apex are presented in Figs. 92–94. Penis 0.16 mm long in lateral view the greatest width 0.05 mm, in ventral view 0.07 mm.

Female genitalia, receptaculum seminis and infundibulum as in Figs. 95–96. Genital plates 0.26 mm long, 0.08 mm wide at most. Infundibulum 0.13 mm long. (The figures of the female presented have been made on the basis of European specimens).

In external appearance the species in question is similar to certain forms of *Scymnus* (*P.*) *urgensis*. Externally it is easily distinguished by the colouration of pronotum, namely, in *S.* (*P.*) *suturalis* pronotum is black, only sometimes with anterior angles brownish, and in *S.* (*P.*) *urgensis* it is brownish with a large black spot. Other differences between these species are given with the description of *S.* (*P.*) *urgensis*.

Only one specimen of this species has been found in Mongolia. In comparison with European individuals it is darker coloured, but other external characters and the structure of male genitalia agree well with the specimens coming from Europe (Bielawski 1968a). The nearest known sites have been ecorded in the vicinity of the Baical Lake (Solsky 1872) and on the banks orf the Amur (Bodemeyer 1927). The species lives on coniferous trees.

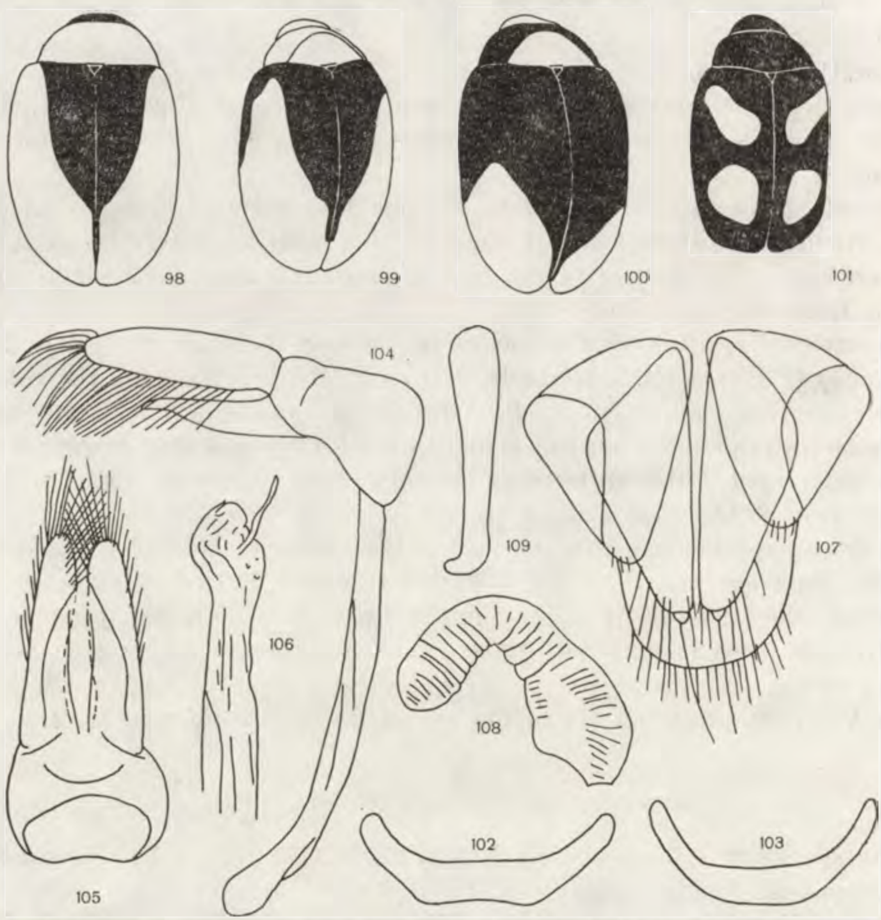
Scymnus (*Pullus*) *urgensis* Jacobs.

The species was described by Fleischer (1900) from "Urga" under the name *Scymnus* (*Pullus*) *mongolicus*. Jacobson (1916) gave it a new name *S.* (*P.*) *urgensis* because the previous one had been put into homonymy (Weise 1890). It was again described twice as *S.* (*P.*) *dorsalis* by Fleischer (1900) and *S.* (*P.*) *arenarius* by Weise (1929). The latest data on the species in question are in the paper by Bielawski (1968a).

http://rcin.org.pl

Body slightly convex in the form of a broad oval. Head black, labrum, antennae and mouthparts brownish-yellow. Pronotum all brownish-red or with a large black spot in the middle at base. Elytra brownish-yellow or orange-yellow with a large black spot covering elytral base and narrowing towards posterior parts of elytra where it is very narrow and surrounds the suture only (Fig. 98). The spot may also cover lateral borders or widen strongly in the anterior half of elytra so that only a half or one-third of the posterior parts of elytra remain brownish-yellow (Fig. 99–100). Scutellum black. Underside of body black, only last abdominal segments brownish. Femora dark brownish, tibiae either yellow-brownish or dark brownish.

Punctures on head quite big, sparsely arranged. Areas shining strongly, without microsculpture, only at punctures there are few irregular dashes.



Figs. 98–109. 98–100 and 102–109 — *Scymnus* (*P.*) *urgensis* Jacob.; 101 — *Scymnus* (*Sidis*) *obsoletus* Ws; 98–101 — outline and pattern of body; 102 — last sternite of male; 103 — last sternite of female; 104–105 male genitalia; 106 — apex of siphon; 107 — female genitalia; 108 — receptaculum seminis; 109 — infundibulum.

http://rcin.org.pl

Punctures on pronotum small, smaller than those on head and sparsely arranged. Areas shining strongly. Elytral punctures big, deep and closely arranged. Areas shining with very shallow scratches at punctures.

Anterior pronotal angles rounded, not produced anteriorly, posterior angles slightly rounded and protruding a little towards the sides. Lateral margins of pronotum almost straight, anterior margin straight. Humeral tubercles large and protruding quite distinctly. Lateral reflexion of elytra distinct only in one-third of the anterior part, farther in the form of a ridge only and it obliterates in the posterior part. Arch of femoral line reaching to mid-length or slightly more than mid-length of segment. In male (Fig. 102) the last sternite with lateral margin evenly notched, the tergite with basal processes short and posterior margin evenly arcuate. In female (Fig. 103) the last sternite with lateral parts strongly elongated and narrow, the tergite quite long with its posterior margin evenly arcuate.

Length 1.5–1.8 mm.

Male genitalia and siphonal apex are given in Figs. 104–106. Penis 0.15 mm long, the greatest width 0.03–0.04 mm in lateral view, and 0.08 mm in ventral view. Siphon to mid-length strongly semicircularly arcuate with a big siphonal sack.

Female genitalia, receptaculum seminis and infundibulum as in Figs. 107–109. Genital plates 0.26 mm long, 0.1 mm the widest. Infundibulum 0.18 mm long.

In external appearance the species is most similar to *S.* (*P.*) *suturalis*. They differ plainly in the structure of genitalia, in males particularly in the shape of penis viewed ventrally and in females in the size and shape of infundibulum. Lightly-coloured forms of this species are similar to *S.* (*P.*) *hofmanni* Ws. occurring in Japan, Korea and China. They differ plainly in the structure of male genitalia. In *S.* (*P.*) *urgensis* the penis is shorter than parameres and in *S.* (*P.*) *hoffmanni* it is definitely longer (Kamiya 1961).

This species very probably lives above the ground.

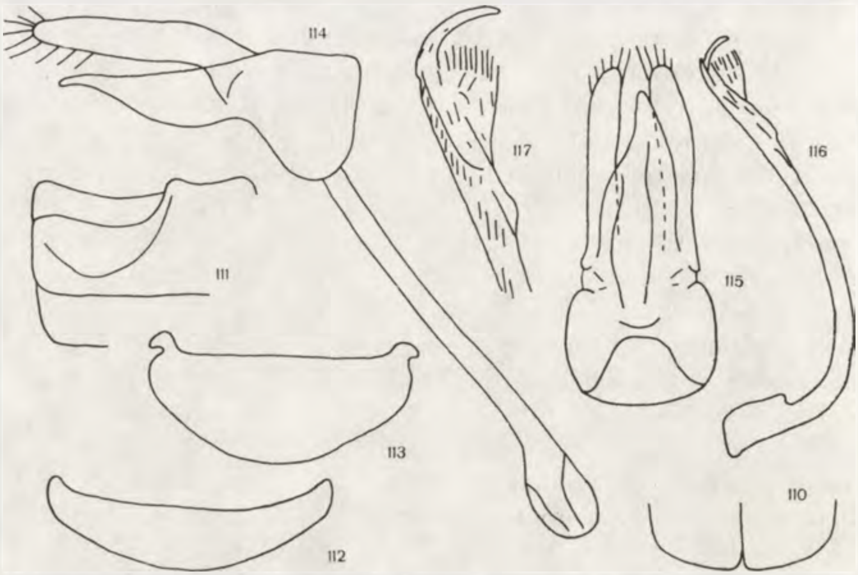
Scymnus (*Sidis*) *obsoletus* Ws.

This species was described from Tibet (Weise 1890) later only mentioned in the catalogues (Winkler 1927, Korschefsky 1931). The description given by Mader (1955) was merely repeated after Weise. Recently recorded also from Mongolia (Bielawski 1968b).

Body strongly depressed, elongate with almost parallel sides and somewhat rounded posteriorly (Fig. 110). Head big, brownish-black. Pronotum, scutellum and elytra brownish-black. On each elytron two big yellowish spots (Fig. 101). Anterior spot elongate, situated obliquely from humeral tubercle towards suture. Outline of the spot indiscernible. Posterior spot with well-marked outline, almost spherical, at a distance from suture slightly smaller

http://rcin.org.pl

than that from lateral border. Elytral apex somewhat lighter than ground-colour. Legs light brownish-yellow with femora a little darkened. Underside of body black-brownish, only margins of the last-but-one and the entire terminal segment of abdomen lighter.



Figs. 110–117. *Scymnus* (*Sidis*) *obsoletus* Ws. 110 – end of elytra; 111 – femoral line; 112 – last sternite of male; 113 – last tergite of male; 114–115 – male genitalia; 116 – siphon; 117 – apex of siphon.

Punctures on head small and shallow, sparsely arranged, made indistinct by clear irregular dashes situated mainly at punctures. Pronotal puncturation consisting of delicate, very sparsely distributed small punctures; intervals between particular punctures many times more than their diameter. Areas between punctures with few delicate scratches. Elytral punctures small but clearly bigger than those on pronotum or on head. Areas between particular punctures more than their diameter, shining with delicate scratches or with few irregular dashes mainly at punctures.

Anterior pronotal angles slightly rounded, narrow and markedly produced anteriorly. Posterior angles broadly rounded. Anterior margin straight. Lateral margins of pronotum straight, clearly ridged. Humeral tubercles small but protruding markedly. Pubescence on upper surface short and sparse, golden. Arch of femoral line (Fig. 111) reaching to three-quarters of the length of segment and directed towards lateral margin where it disappears. In male (Fig. 112) last sternite is quite long, feebly reflexed with posterior margin evenly, but flatly arcuate. Last tergite (Fig. 113) long with lateral margin almost semicircularly arcuate and basal processes very small, directed towards sides.

http://rcin.org.pl

Length 1.7 mm.

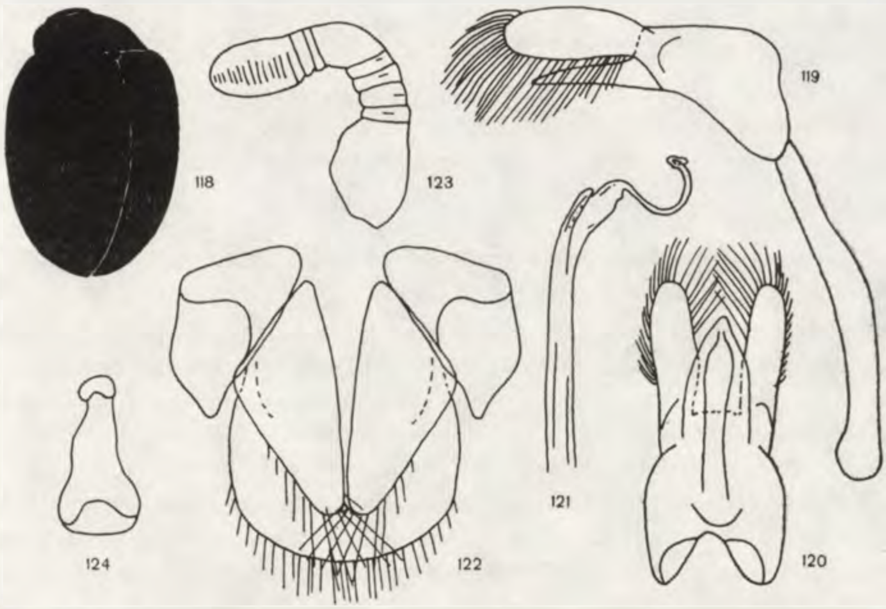
Male genitalia, siphon and siphonal sack presented in Figs. 114–117. Penis 0.125 mm long, the greatest width 0.045 mm in lateral view, 0.06 mm in ventral view.

The species was recorded in a definitely xerothermic habitat on *Haloxylon*.

Scymnus (*Scymnus*) *nigrinus* Kugel.

Up till recent years the species was recorded from Europe only. The fact that it has been recorded from Mongolia (Bielawski 1968b) expands its territory far towards the est. Basing on the biology of the species – *S.* (*S.*) *nigrinus* lives in coniferous forests – it may be assumed to occur all over Siberia as well.

Body slightly convex, oval, all black (Fig. 118) except for antennae and tarsi which are dark brownish.



Figs. 118–124. *Scymnus* (*S.*) *nigrinus* Kugel. 118 – outline and pattern of body; 119–120 – male genitalia; 121 – apex of siphon; 122 – female genitalia; 123 – receptaculum seminis; 124 – infundibulum.

Punctures on head large and closely arranged. Areas with fairly long separate dashes. Pronotal punctures of similar size as those on head, areas between them the same as their diameter. Areas between punctures with quite distinct irregular dashes situated mainly at punctures. Elytral punctures very large and arranged very dense so that intervals are less than their diameter.

http://rcin.org.pl

Areas between punctures covered with well-expressed microsculpture in the form of irregular dashes.

Upper surface of body covered with long adpressed white pubescence. Anterior angles of pronotum feebly rounded and not produced anteriorly. Anterior margin straight. Lateral margins straight. Humeral tubercles large, produced, at the same distance from the anterior and the lateral margins. Elytra broadly rounded posteriorly, Arch of femoral line reaching to about four-fifths of length of segment. Apex of femoral line at the same distance from anterior and lateral margins. In male last sternite slightly curved W-like, posterior margin notched, last tergite big with short basal processes. In female last sternite lunulate, last tergite long with basal processes hooked.

Length 2–2.8 mm. Length of the body of the Mongolian specimen 2.8 mm.

Male genitalia and siphonal apex are given in Figs. 119–121. Penis 0.24 mm long, its greatest width 0.05 in lateral view, 0.12 mm in ventral view.

Female genitalia, receptaculum seminis and infundibulum as in Figs. 122–124. Genital plate 0.34 mm long, 0.14 mm wide at most. Infundibulum 0.17 mm long.

The only representative of this species found in Mongolia is female (Bielawski 1968b) and it is identical with European specimens. It was swept from steppe plants (Kaszab 1966). In Europe it lives on pines and occasionally it is found on other coniferous trees, never on herbaceous plants.

Scymnus (*Scymnus*) *abietis* Payk.

Until recently the species was recorded from Europe only. It has been recorded from Mongolia (Bielawski 1968a, 1975) on the basis of two specimens. *S.* (*S.*) *abietis* lives, just as the previous species, on conifers and most probably occurs all over Siberia.

Body oval, slightly elongate and quite strongly convex (Fig. 125). Body all yellow-brownish or brownish-red, sometimes only the chest feebly darkened.

Punctures on head big, at sides arranged very closely and towards middle more and more sparsely. Areas between punctures smooth with few scratches. Pronotal punctures big and arranged very closely. Areas between punctures smooth. Elytral puncturation homogeneous, punctures big and closely arranged. Areas between punctures with a fairly distinct microsculpture in form of irregular dashes.

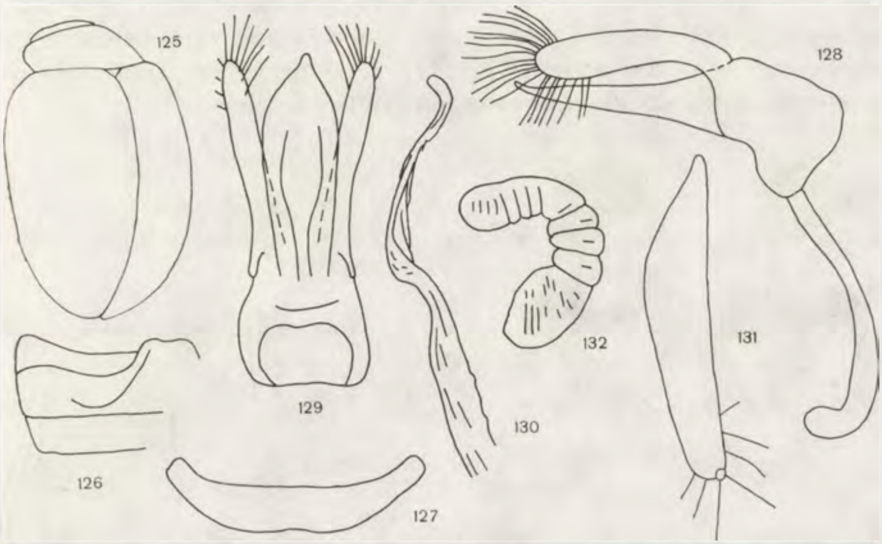
Anterior angles of pronotum almost straight and only slightly produced anteriorly. Lateral margins of pronotum straight. Humeral tubercles on elytra big, prominent, situated closer to anterior margin than to lateral one. Lateral borders of elytra very feebly reflexed. Arch of femoral line (Fig. 126) reaching very near to posterior margin, its apex situated closer to posterior margin than to anterior and lateral ones. In male (Fig. 127) last sternite slightly notched

http://rcin.org.pl

in the middle of posterior margin. Last sternite of female almost straight, evenly truncate at apices.

Length 2.6 mm and 2.8 mm.

Male genitalia are given in Figs. 128–130. Penis 0.37 mm long, 0.1 mm wide at base in lateral view, the greatest width 0.13 mm when viewed from below.



Figs. 125–132. *Scymnus* (*S.*) *abietis* PAYK. 125 — outline and pattern of body; 126 — femoral line; 127 — last sternite of male; 128–129 — male genitalia; 130 — apex of siphon; 131 — genital plate; 132 — receptaculum seminis; (Female specimen is from Poland).

Female genitalia. Genital plate as in Fig. 131. Genital plate 0.35 mm long, 0.07 mm wide. Receptaculum seminis in Fig. 132, crescent-shaped with three large rings.

The species is easily distinguished from others recorded from Mongolia because the colouration of its entire body is homogeneously brownish. In external appearance it resembles *S.* (*S.*) *paganus* LEW, occurring only in Japan. In Europe there are several species coloured in this way, but they usually belong to other subgenera.

In Mongolia this species was collected at the edge of a coniferous and birch forest. As in Europe, it probably lives here on coniferous trees.

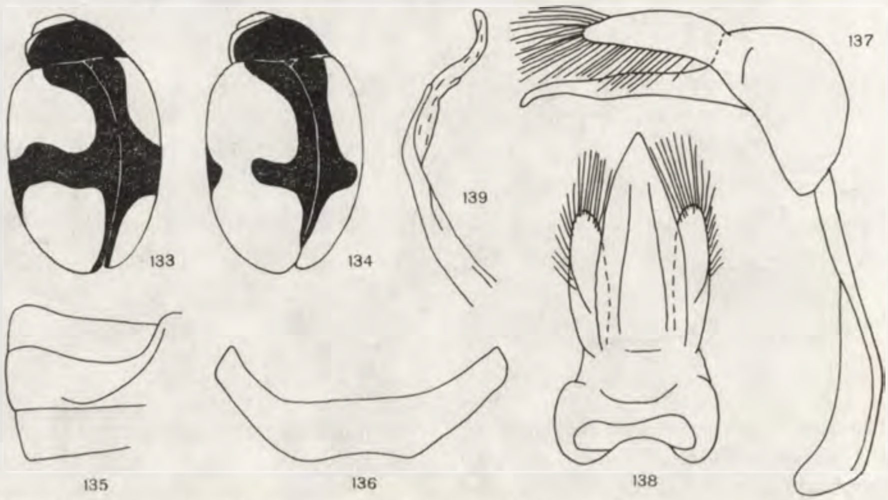
Scymnus (*Scymnus*) *manipulus* FÜRSCH et KREISSL

For the first time the species was recorded from Mongolia (BIELAWSKI 1968a) under the name *S.* (*S.*) *inderihensis* MULS., later as *S.* (*S.*) *rufipes* (F.) (BIELAWSKI 1968b). More detailed studies indicate that these specimens and

http://rcin.org.pl

the latter ones (Bielawski 1975) belong to *S.* (*S.*) *manipulus* recorded from Turkestan, Transcaspia and Caucasus (Fürsch and Kreissl 1967).

Body moderately convex in the form of a broad oval. Head rusty-red with base darkened to various degree. Pronotum black with sides and anterior margin reddish. In certain specimens the light colouration may be limited only to the anterior half of lateral margins. Elytra black with two large brownish spots and a lighter apex (Fig. 133). The spots may be interconnected at middle. Anterior spot always reaching to lateral border. Anterior spot covering a part of base as well, and posterior one either not reaching to borders or covering almost the entire elytral apex (Fig. 134). Legs brownish. Underside of body black, only margins of abdominal segments light.



Figs. 133–139. *Scymnus* (*S.*) *manipulus* Fürsch et Kreis. 133–134 — outline and pattern of body; 135 — femoral line; 136 — last sternite of male; 137–138 — male genitalia; 139 — apex of siphon.

Punctures on head large, arranged fairly sparsely and unevenly. Areas between them with distinct microsculpture in the form of irregular dashes, partly interconnected. Pronotal punctures large, of similar size as those on head, but arranged more closely and more regularly. Areas between them with traces of microsculpture in the form of irregular dashes. Elytral punctures of various sizes, big and slightly smaller, arranged very closely. In the anterior half big punctures as if forming short, very indistinct rows. Areas between them with not very distinct microsculpture.

Pronotal anterior angles slightly rounded and produced anteriorly. Lateral margins feebly arcuate. Humeral tubercles on elytra very large, prominent and at the same distance from lateral and anterior margins. Arch of femoral line (Fig. 135) reaching almost to posterior margin and terminating there. The posterior margin of last sternite in male (Fig. 136) strongly and evenly notched.

http://rcin.org.pl

Length 2.2–2.6 mm.

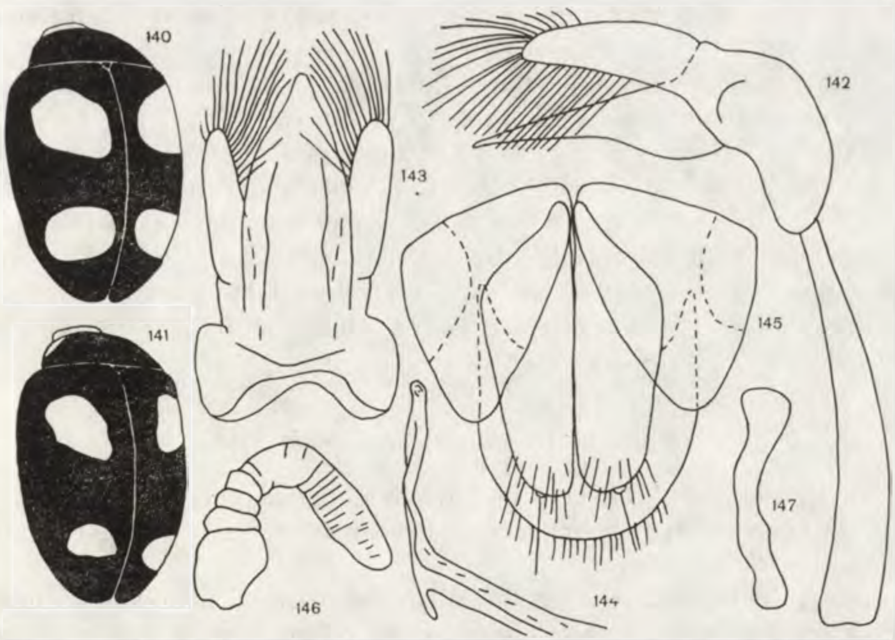
Male genitalia as in Figs. 137–139. Siphonal apex without a distinct hooked process. On average, penis 0.3 mm long, 0.04 mm wide in lateral view and 0.12 mm wide in ventral view.

Specimens of this species were collected in various habitats. *S.* (*S.*) *manipulus* occurs in extreme eastern and western parts of Mongolia. There are small differences between individuals from the two parts. Specimens from the east are smaller, the posterior spot on elytra is more diffused and reaches to borders. Specimens from the west are bigger, with the spot not reaching to borders.

Scymnus (*Scymnus*) *frontalis* (F.)

For the first time the species was recorded from Mongolia by Weise (1890) and later three times by the present writer (Bielawski 1965, 1968a, 1975).

Body depressed, slightly oval. Head in male yellow-red, in females black. Pronotum black, in males at sides a yellow-red spot reaching to three-quarters length of pronotum at lateral margin, in females pronotum black or only anterior margin near anterior angles yellow-reddish, occasionally anterior margin may be narrowly yellow-reddish in both sexes. Elytra black with two big red-yellow spots on each (Figs. 140–141). Neither spot reaching to any margin.



Figs. 140–147. *Scymnus* (*S.*) *frontalis* (F.). 140–141 — outline and pattern of body; 142–143 — male genitalia; 144 — apex of siphon; 145 — female genitalia; 146 — receptaculum seminis; 147 — infundibulum.

http://rcin.org.pl

Anterior spot reaching from humeral tubercle almost to mid-length of elytra and usually situated obliquely. Posterior spot is most frequently situated transversely. Its distance from suture or lateral border is smaller than that from posterior border. The size of this spot is different in various individuals, but the difference is small. Legs brownish, sometimes femora slightly darkened. Underside of body black.

Punctures on head fairly big and closely arranged, areas between them with few irregular dashes. Pronotal punctures big, slightly bigger than those on head, deep and closely arranged. Areas between them smooth. Elytral punctures big, deep and closely arranged. A few punctures slightly bigger, but puncturation is homogenous as a rule. Areas between punctures with a shallow indistinct microsculpture in the shape of irregular dashes and very small punctures.

Anterior angles of pronotum rounded, not produced. Lateral margins feebly but evenly arcuate. Humeral tubercles big but feebly marked, situated closer to lateral border than to anterior one. Arch of femoral line reaching almost to posterior margin and then only slightly bending anteriorly so that its end is closest to posterior margin. Last sternite in male with posterior margin clearly notched, in female arcuate.

Length 2.8–3.4 mm.

Male genitalia as in Figs. 142–143. Siphonal apex with a big hooked process (Fig. 144). Penis 0.38 mm long, 0.11 mm wide at base in lateral view, the greatest width 0.16 mm when viewed from below.

Female genitalia as in Fig. 145. Genital plate 0.31 mm long, 0.13 mm wide. Receptaculum seminis and infundibulum presented in Figs. 146–147.

Individuals of this species are found quite seldom and they were collected in mountain steppes with rich vegetation and in dry feather-grass steppes.

In body size and in spot pattern the species resembles *S.* (*S.*) *doriai* most. In comparison with European individuals, those found in Mongolia are unusually big and no individuals with one elytral spot have been recorded from Mongolia whereas in Europe such individuals occur frequently. The species is most similar to *S.* (*S.*) *bogdoensis*.

Scymnus (*Scymnus*) *bogdoensis* Biel.

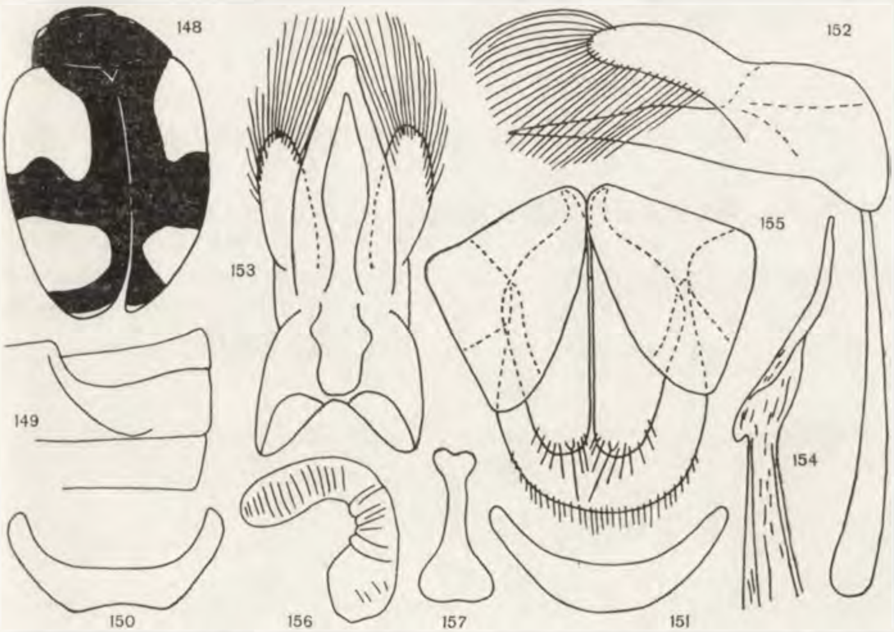
The species has been recorded from Mongolia only (Bielawski 1965). In Bielawski's 1975 paper this name has been erroneously used for a specimen belonging to *S.* (*S.*) *doriai*.

Body quite strongly convex, broadly oval. Head in male yellow, in female black. Pronotum black with lateral margins yellow in male and only anterior angles are yellow in female. Elytra black or blackish-brownish, brownish at apex, with large yellow-brownish spots on each (Fig. 148). Anterior spot reaching to lateral border and near humeral tubercle also to elytral base. Posterior spot

http://rcin.org.pl

sometimes reaching to elytral border. Legs yellow-brownish. Underside of body black.

Punctures on head quite big and closely arranged, areas between them smooth. Pronotal punctures slightly smaller, also closely arranged, areas between them with traces of microsculpture in the shape of very small punctures and delicate dashes beside punctures. Elytral puncturation consists of big and small punctures, the difference between them being not very significant. Punctures closely arranged, areas between them with irregular dashes beside punctures. Big punctures arranged irregularly, not forming rows.



Figs. 148–157. *Scymnus* (*S.*) *bogdoensis* BIEL. 148 — outline and pattern of body; 149 — femoral line; 150 — last sternite of male; 151 — last sternite of female; 152–153 — male genitalia; 154 — apex of siphon; 155 — female genitalia; 156 — receptaculum seminis; 157 — infundibulum.

Humeral tubercles very small, feebly produced, at the same distance both from base and from lateral margin. Femoral line (Fig. 149) incomplete, its arch reaching almost to posterior margin of segment and curving there laterally. Distance between its apex and lateral margin many times more than between its end and posterior margin. In male (Fig. 150) last sternite broadly U-shaped, feebly notched at posterior margin. In female (Fig. 151) last sternite with posterior margin evenly arcuate.

Length 2.4–2.8 mm.

Male genitalia given in Figs. 152–153. Penis 0.29 mm long, 0.08 mm wide,

http://rcin.org.pl

longer than parameres. Siphonal apex as in Fig. 154, with a small hooked process.

Female genitalia as in Fig. 155. Genital plates short, only 0.35 mm long, the greatest width 0.13 mm. Receptaculum seminis and infundibulum as in Figs. 156–157.

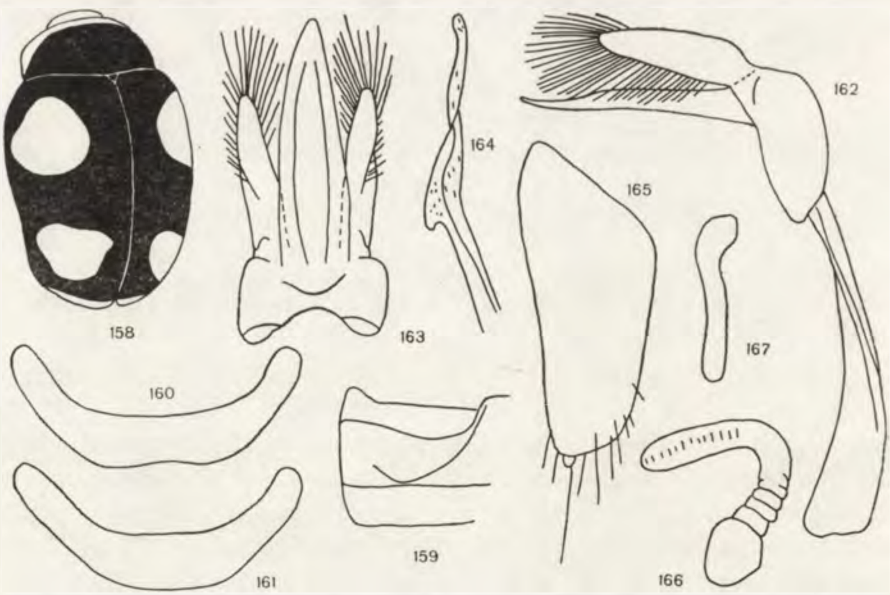
The species was collected in various habitats.

S. (*S.*) *bogdoensis* greatly resembles *S.* (*S.*) *inderihensis*. Male genitalia in *S.* (*S.*) *bogdoensis* are similar to those in *S.* (*S.*) *frontalis*, but in the former species penis, when viewed laterally, is not widened at base as strongly as in the latter. Siphonal apex and the shape of infundibulum are also slightly different in both species.

Scymnus (*Scymnus*) *doriai* Capra

Ut till now the species was recorded only from southern and eastern Europe (Fürsch 1967), with the Balcan Peninsula forming the easternmost area. From Mongolia recorded twice (Bielawski 1968a, 1975).

Body moderately convex, in the shape of a broad oval with margins almost parallel. Head in male yellowish-brown, in female black. Pronotum black, in male almost entire sides and anterior margin, yellow-brownish, in female only anterior margin and sides near anterior angles yellow-brownish. Elytra



Figs. 158–167. *Scymnus* (*S.*) *doriai* Capra. 158 — outline and pattern of body; 159 — femoral line; 160 — last sternite of male; 161 — last sternite of female; 162–163 — male genitalia; 164 — apex of siphon; 165 — genital plate; 166 — receptaculum seminis; 167 — infundibulum.

http://rcin.org.pl

black, two big red-brownish spots on each and elytral apex quite broadly light (Fig. 158). The spots are usually of the same size. Anterior spot reaching quite close to lateral border below humeral tubercles. Legs brownish. Underside of body black, only terminal segments of abdomen lighter.

Punctures on head fairly big, sparsely arranged, areas between them smooth. Pronotal punctures such as on head, sparsely arranged and areas between them smooth. Elytral puncturation consists of very numerous small punctures and less numerous big ones. The difference in size is great. Punctures arranged quite closely, the small ones regularly, forming rows over short distances, the big ones forming rows in an irregular way. Areas between punctures smooth.

Lateral margins of pronotum arcuate quite evenly. Humeral tubercles on elytra big, but very feebly marked and situated closer to anterior border than to lateral one. Lateral reflexion of elytra well-expressed. Arch of femoral line (Fig. 159) reaching to posterior margin and its apex is at the same distance from posterior margin as from lateral one. In male last sternite (Fig. 160) evenly arcuate with posterior margin slightly notched. In female last sternite (Fig. 161) broadly obtuse with posterior margin almost straight.

Length 2.8–3.2 mm.

Male genitalia are presented in Figs. 162–163. Penis narrow, long and at apex arcuate towards parameres. Penis 0.42 mm long, 0.05 mm wide in lateral view, 0.12 mm wide in ventral view. Siphonal apex (Fig. 164) with a small blunt and hooked process and with a wide long flagellum.

Female genitalia. Genital plate as in Fig. 165. Genital plate 0.35 mm long, the greatest width 0.14 mm. Receptaculum seminis very narrow with nodulus almost circular. Infundibulum as in Figs. 166–167.

The species is similar to the above mentioned: *S.* (*S.*) *manipulus*, *S.* (*S.*) *frontalis* and *S.* (*S.*) *bogdoensis*. In spot pattern it resembles *S.* (*S.*) *frontalis* most, in the structure of male genitalia it is closest to *S.* (*S.*) *bogdoensis*.

S. (*S.*) *doriai* was collected mainly in mountain steppes, on blossoming *Urtica*, etc.

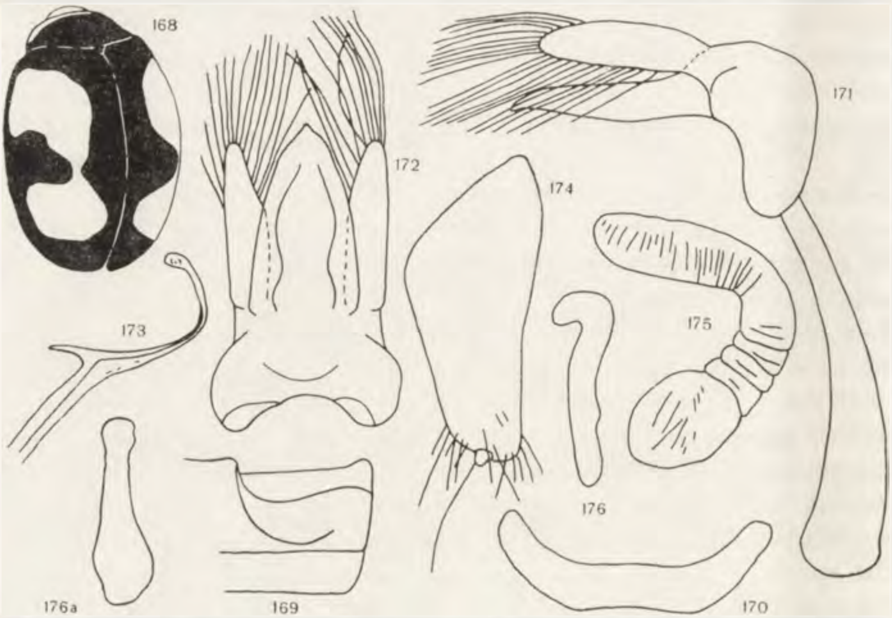
Scymnus (*Scymnus*) *inderihensis* MULS.

The species was recorded from Mongolia several times, but under a wrong name *S.* (*S.*) *quadrivulneratus* (BIELAWSKI 1965, 1965, 1968a, b). Investigations by FÜRSCH and KREISSL (1967), and particularly studies on the types, made it possible to explain the meaning of both names. It turned out that the name *S. quadrivulneratus* was a synonym of *S. frontalis* and individuals recorded from Mongolia as *S. quadrivulneratus* belonged to *S.* (*S.*) *inderihensis* (BIELAWSKI 1975).

Body moderately convex, in shape of an oval, widest at mid-length. Head in male yellow-brownish, in female black. Pronotum black, in male distinctly

http://rcin.org.pl

anterior margin and anterior part of lateral margins yellow-brownish, in female anterior margin black or very narrowly and indistinctly lighter while the yellow-brownish colouration at sides being restricted only to anterior angles. Elytra black with a slightly lighter apex and two large yellow-brownish spots on each (Fig. 168). Size and shape of the spots quite variable. Most frequently they are interconnected by a narrow band, sometimes they are almost confluent as if forming one large spot slightly narrower at mid-length. Anterior spot usually strongly diffused towards lateral border. Legs brownish-yellow, occasionally femora, particularly in female, darkened. Underside of body black.



Figs. 168–176. *Scymnus* (*S.*) *inderihensis* MULS. 168 — outline and pattern of body; 169 — femoral line; 170 — last sternite of male; 171–172 — male genitalia; 173 — apex of siphon; 174 — genital plate; 175 — receptaculum seminis; 176 — infundibulum, lateral view; 176a — infundibulum, ventral view.

Punctures on head small, sparsely arranged at middle and more closely at sides, areas between them smooth. Pronotal punctures small, sparsely arranged, areas smooth. Elytral puncturation consists of small and big punctures arranged in anterior half, particularly near suture, in distinct rows. Small punctures are even smaller than those on pronotum and they are sparsely arranged. Areas between punctures smooth.

Anterior angles of pronotum feebly rounded, almost straight, not produced anteriorly. Lateral margins of pronotum very feebly arcuate. Humeral tubercles big and clearly produced, situated a little closer to lateral border than to anterior one. Arch of femoral line (Fig. 169) reaching almost to posterior margin

http://rcin.org.pl

and slightly bending so that the distance between its apex and posterior margin is smaller than that from lateral margin. Last sternite in male (Fig. 17) with posterior margin slightly notched. Last sternite in female with posterior margin evenly, almost semicircularly arcuate.

Length 2.0–3.0 mm.

Male genitalia as shown in Figs. 171–172. Penis reaching beyond the parameres only a little, in lateral view slightly S-shaped. Penis 0.26 mm long, 0.06 mm wide at base in lateral view, the greatest width 0.13 mm when viewed from below. Siphonal apex with a long hooked process (Fig. 173).

Female genitalia. Genital plate as in Fig. 174, 0.30 mm long, 0.13 mm wide. Receptaculum seminis and infundibulum as in Figs. 175–176.

In the structure of male genitalia the species is most similar to *S.* (*S.*) *frontalis*.

S. (*S.*) *inderihensis* is one of the most frequently and most numerously recorded species in Mongolia. It occurs in various habitats, but mainly in steppe-like ones. If vegetation in a given habitat is poor, the species lives on soil and it was collected among plants and under stones. In habitats with rich vegetation it lives on plants as well. The greatest numbers were collected on nettles and on *Caragana*.

Scymnus (*Scymnus*) *interruptus* Muls.

The species was recorded from Mongolia by Weise (1879) under the name *S.* (*Sidis*) *castanopterus* Muls. The specimen described had the elytra all light: "Flgd. hell rothgelb". Many authors (Korschefsky 1931, Mader 1955, Goureau 1974) assume that it was a colour variety of *S.* (*S.*) *interruptus*. Unfortunately, so far no other individuals of the species have been recorded from Mongolia, neither a form with typical colouration nor any coloured form. Therefore the occurrence of this species is questionable and must be confirmed. However, in case it occurs, the description given below is based on European specimens.

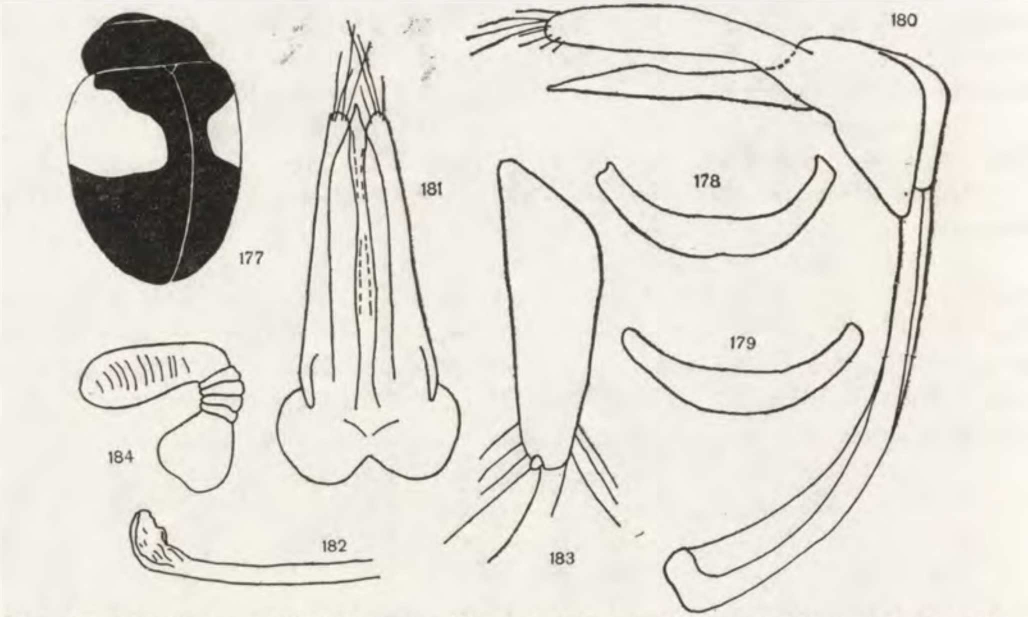
Body in the shape of a broad oval, moderately convex. Head yellow-brownish in male, black in female. Pronotum black, only anterior angles yellow-brownish; in male the colour covers lateral margins and anterior angles, in female it is restricted to a narrow band situated at the very anterior margin near anterior angles. Elytra black with a big red-yellow spot in anterior half and running diagonally from humeral tubercles towards suture (Fig. 177). Base of the spot covers almost half of the length of elytral lateral border. Legs in male light, in female light with femora darkened to half-length. Underside of body black, only pronotal epipleurae (in anterior half) and elytral epipleurae brownish-yellowish.

Punctures on head big, sparsely arranged, areas between them with shallow microsculpture in the shape of irregular dashes. Pronotal punctures small, sparsely arranged, areas between them with distinct irregular dashes situated

http://rcin.org.pl

mainly radially at punctures. Elytral puncturation consists of big and small punctures, deep and closely arranged. Areas between punctures almost smooth.

Anterior angles of pronotum broadly rounded. Lateral margins distinctly and quite broadely ridged. Humeral tubercles on elytra large, prominent and at the same distance from lateral border as from anterior one. Arch of femoral



Figs. 177–184. *Scymnus* (*S.*) *interruptus* (Goeze). 177 — outline and pattern of body; 178 — last sternite of male; 179 — last sternite of female; 180–181 — male genitalia; 182 — apex of sipho; 183 — genital plate; 184 — receptaculum seminis.

line reaching to posterior margin. Last sternite in male (Fig. 178) shallowly and narrowly notched at posterior margin. Last sternite in female (Fig. 179) evenly arcuate.

Length 1.8–2.2 mm.

Male genitalia as in Figs. 180–181. Penis 0.24 mm long, 0.03 mm wide in lateral view, 0.06 mm wide in ventral view. Siphonal apex (Fig. 182) slightly widened.

Female genitalia. Genital plates (Fig. 183) wide. Genital plate 0.28 mm long, the greatest width 0.08 mm. Receptaculum seminis (Fig. 184) with an almost circular and small nodulus.

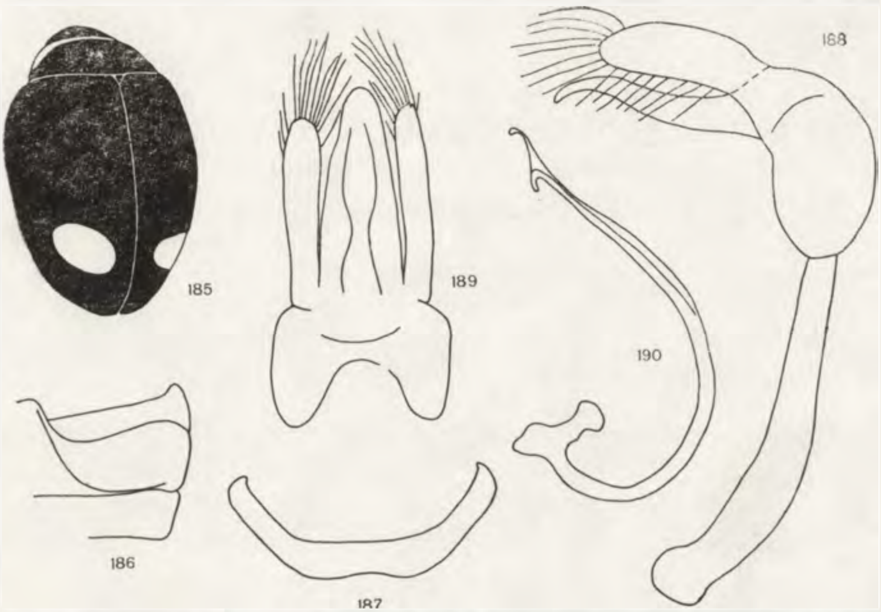
Scymnus (*Scymnus*) *jakowlewi* Ws.

The species was recorded from Irkuck (Weise 1892). Later Sahlberg (1914) described *S.* (*S.*) *triangularis* from the Scandinavian Peninsula, but Korschefsky (1931) changed the name (that had been used previously) to *S.* (*S.*)

http://rcin.org.pl

sahlbergi. Investigations by FÜRSCH and KREISSL (1967) proved that the species described by SAHLBERG was identical with the one described by WEISE. *S.* (*S.*) *jakowlewi* has been recorded from Mongolia only once (BIELAWSKI 1975).

Body moderately convex in the shape of a broad oval. Head yellow-orange. Pronotum black, only anterior margin and lateral ones yellow-orange, the colour particularly wide near anterior angles. Elytra black with an oval yellow-reddish spot situated at three quarters of length (Fig. 185). The spot is slightly diagonal and closer to suture than to lateral border. Legs yellow-orange. Underside of body black, only terminal segment of abdomen slightly lighter.



Figs. 185–190. *Scymnus* (*S.*) *jakowlewi* Ws. 185 — outline and pattern of body; 186 — femoral line; 187 — last sternite of male; 188–189 — male genitalia; 190 — siphon.

Punctures on head very small and sparsely arranged, areas between them smooth. Pronotal punctures small, a little bigger than on head, sparsely arranged, areas between them smooth. Puncturation on elytra consists of big and a few very big punctures. The difference in size is not significant. Punctures arranged fairly closely, areas between them virtually smooth.

Anterior angles of pronotum almost straight, feebly rounded Lateral margins very feebly arcuate. Humeral tubercles big, but produced feebly and situated slightly nearer to lateral border than to anterior one. Arch of femoral line (Fig. 186) reaching almost to posterior margin and running farther on parallel to it, not reaching to lateral border. Last sternite in male (Fig. 187) short, strongly curved with posterior margin slightly notched.

http://rcin.org.pl

Length 2.8 mm.

Male genitalia as in Figs. 188–189. Penis S-shaped in lateral view. Penis 0.3 mm long, 0.05 mm wide in lateral view, 0.13 mm wide in ventral view. Siphon (Fig. 190) curved in posterior half, before apex with a narrow, long hooked process and at apex with a wide short flagellum.

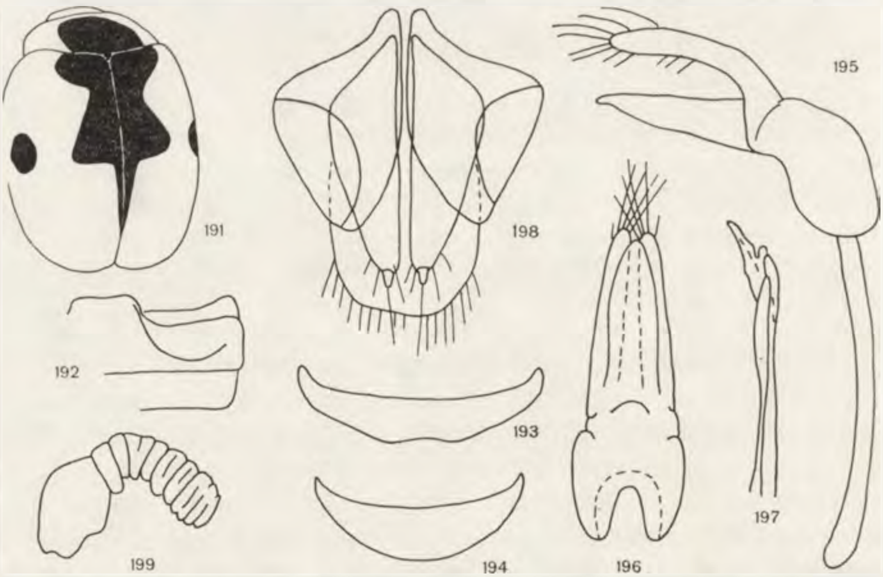
The species clearly differs from others belonging to this subgenus by the characteristically placed elytral spot in posterior half of elytron. The structure of genitalia makes it most similar to *S.* (*S.*) *mimulus* Capra et Fürsch.

Scymnus (*Scymnus*) *kaszabi* Biel.

The species is known and has been recorded from Mongolia only (Bielawski 1975).

Body slightly convex, shortly oval. Head yellowish. Pronotum either yellowish or darkened at middle so that a dark spot appears, but it does not reach to anterior margin. Elytra yellowish, with a characteristic dark pattern at suture and with one round spot at each lateral border at mid-length (Fig. 191). In particular specimens the intensity of colouration of elytral pattern varies. Legs yellowish. Underside of body dark brownish, only sides of abdominal segments light.

Punctures on head large, sparsely arranged, upper surface of head with distinct reticulate microsculpture. Pronotal puncturation very indistinct, dom-



Figs. 191–199. *Scymnus* (*S.*) *kaszabi* Biel. 191 – outline and pattern of body; 192 – femoral line; 193 – last sternite of male; 194 – last sternite of female; 195–196 – male genitalia; 197 – apex of sipho; 198 – female genitalia; 199 – receptaculum seminis.

http://rcin.org.pl

inated by strongly developed microsculpture. Punctures on elytra small, indiscernible, closely arranged, areas between them with distinct, thick microsculpture in the form of irregular dashes.

Anterior angles of pronotum feebly rounded, lateral margins almost straight. Humeral tubercles on elytra small, at the same distance from lateral border and from base. Arch of femoral line (Fig. 192) reaching to three-quarters of the length of segment. Last sternite in male (Fig. 193) short, feebly curved, with posterior margin slightly notched. Last sternite in female (Fig. 194) long, feebly curved, with apices acute.

Body 2.0–2.3 mm long.

Male genitalia as in Figs. 195–196. Penis 0.17 mm long, 0.05 mm wide at base, 0.05 mm wide in ventral view. Siphonal apex as in Fig. 197.

Female genitalia as in Fig. 198. Genital plate 0.25 mm long, the greatest width 0.08 mm. Receptaculum seminis (Fig. 199) with numerous rings on curnu.

S. (*S.*) *kaszabi* differs from other species by the characteristic elytral pattern. It is most similar to *S.* (*S.*) *nubilis* MULS. and *S.* (*S.*) *levaillanti* MULS., but differs from them by the shape of penis. In external appearance it resembles certain colour varieties of *S.* (*Pullus*) *coccivora* RAMAKR.

The species was swept from *Haloxylon*, *Tamarix*, *Ephedra* and *Caragana*.

Scymnus (*Nephus*) *spilotus* WS.

The species was recorded from Irkuck (WEISE 1900), MADER (1955) gave aredescription and FÜRSCH (1965) selected the lectotype and presented a description and figures with female genitalia. From Mongolia recorded twice (BIELAWSKI 1968a, 1975).

Body fairly strongly convex in the form of a strongly elongate oval. Head and pronotum black. Occasionally anterior angles and anterior margin lighter. Elytra black or black-brownish with posterior one-third brownish-yellow (Fig. 200). Underside of body black or black-brownish.

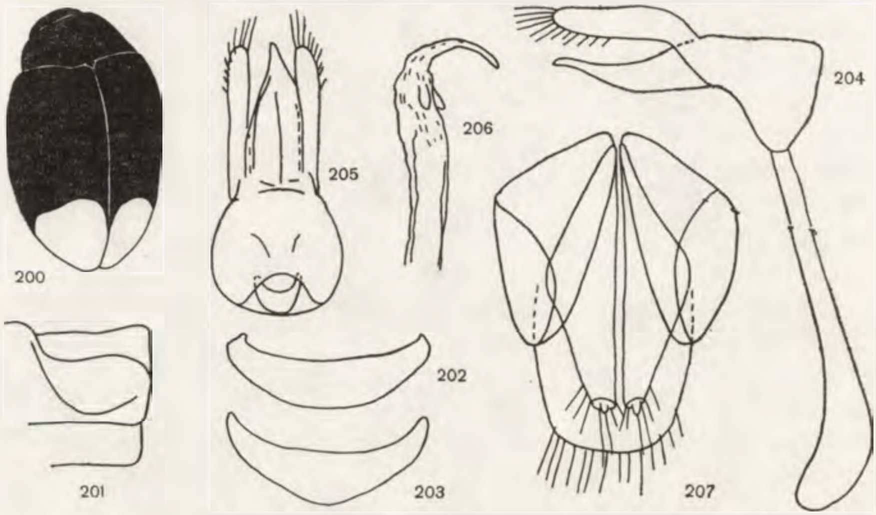
Punctures on head of medium size, arranged very sparsely, areas with a few very small punctures. Punctures on pronotum a little bigger than on head, closely arranged, areas between them with few scratches. Elytral punctures big and closely arranged, areas between them with strongly marked microsculpture so strong that punctures are hardly discernible.

Pronotal anterior angles feebly rounded and fairly strongly produced anteriorly. Lateral margins of pronotum markedly arcuate. Humeral tubercles very faintly marked and situated closer to lateral margin than to anterior one. Arch of femoral line (Fig. 201) reaching to posterior margin, bends towards lateral margin. Last sternite in male (Fig. 202) very faintly curved with posterior margin almost straight. Last sternite in female (Fig. 203) strongly curved so that the posterior margin is bent almost at angle at mid-length.

http://rcin.org.pl

Length 1.8–2.2 mm.

Male genitalia as in Fig. 204–205. Penis S-shaped in lateral view, assymmetric in ventral view. Penis 0.23 mm long, 0.07 mm wide in lateral view, 0.09 mm wide in ventral view. Siphon feebly curved, quite massive at apex, with a long hooked process (Fig. 206).



Figs. 200–207. *Scymnus* (*N.*) *spilotus* Ws. 200 – outline and pattern of body; 201 – femoral line; 202 – last sternite of male; 203 – last sternite of female; 204–205 – male genitalia; 206 – apex of siphon; 207 – female genitalia.

Female genitalia (Fig. 207). Genital plates elongate, the greatest width almost at mid-length. Genital plate 0.32 mm long, 0.08 mm wide. Receptaculum seminis lost during the preparation.

The species clearly differs from others in elytral colouration which is light in their posterior one-third. This lighter colour is due to diffusion of the large spot on the posterior half. In the structure of male and female genitalia the species is similar to *S.* (*N.*) *changajensis*.

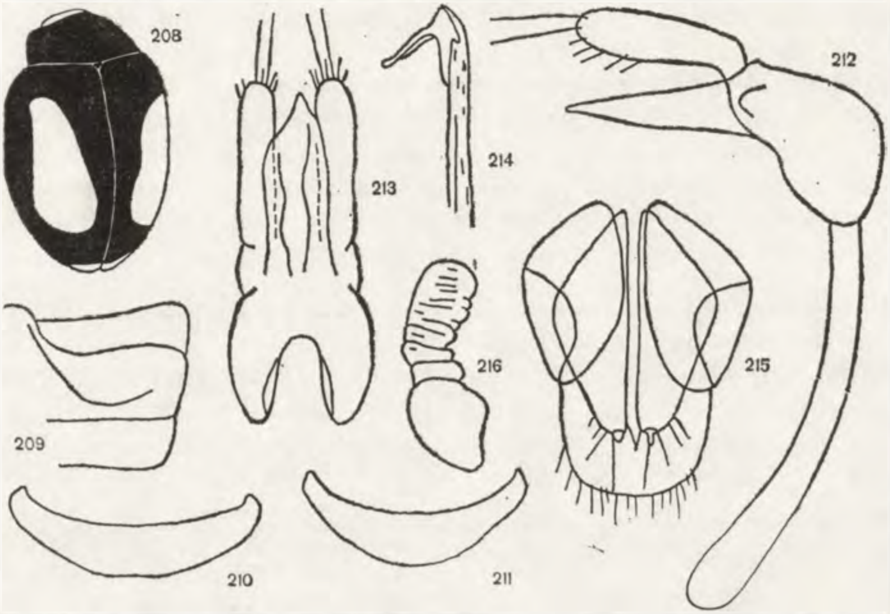
Specimens were collected mainly on the ground, among poor vegetation on the slopes of strongly insolated hills. They were also swept from various steppe plants, as well as found in pit-fall traps placed between *Caragana* and *Amygdalus*.

Scymnus (*Nephus*) *incinctus* Muls.

The species described from the Asiatic Russia has so far been considered to be a variety or synonym of *S.* (*N.*) *redtenbacheri* Muls. Investigations by the author (Bielawski 1964) have demonstrated that it should be considered as separate species, and this opinion has been confirmed by Fürsch (1965). From Mongolia recorded twice (Bielawski 1964, 1975).

http://rcin.org.pl

Body moderately convex in the form of a broad oval. Head brownish-yellow with base and sides black in male. Head in female totally black. Pronotum black with brownish-yellow anterior angles in male, all black in female. Anterior margin of pronotum slightly lighter in both sexes. Elytra black with a slightly lighter apex and a big oblong brownish-yellow spot situated slightly diagonally and reaching from humeral tubercles to four-fifths of the length of elytra (Fig. 208). The spot widens a little from front backwardly. Legs light, underside of body brownish-black or black.



Figs. 208–216. *Scymnus* (*N.*) *incinctus* MULS. 208 — outline and pattern of body; 209 — femoral line; 210 — last sternite of male; 211 — last sternite of female; 212–213 — male genitalia; 214 — apex of siphon; 215 — female genitalia; 216 — receptaculum seminis.

Punctures on head quite big, sparsely arranged, areas between them with quite distinct microsculpture in the shape of delicate scratches and fairly shallow, but short irregular dashes. Punctures on pronotum small, sparsely arranged. Areas between them with distinct microsculpture in the form of irregular, frequently interconnected dashes. Elytral punctures fairly deep, closely arranged. Areas between them shining, only at punctures there are radially arranged short dashes.

Anterior angles of pronotum rounded and produced anteriorly. Lateral margins of pronotum almost straight. Humeral tubercles well developed, situated almost in the middle between anterior and lateral margins. Arch of femoral line (Fig. 209) reaching to three-fourth of length of segment. Last sternite in male (Fig. 210) faintly curved with posterior margin slightly notched. Last sternite in female (Fig. 211) with posterior margin almost semicircularly curved.

http://rcin.org.pl

Length 1.4–1.8 mm.

Male genitalia as in Figs. 212–213. Penis as long as parameres, almost straight in lateral view, assymmetrically strongly notched at apex when viewed from below. Penis 0.15 mm long, 0.04 mm wide in lateral view, 0.04 mm wide in ventral view. Siphon strongly curved in posterior half, its apex with a fairly long processes (Fig. 214).

Female genitalia as in Fig. 215. Genital plates wide, the greatest width before mid-length. Genital plate 0.28 mm long, the greatest width 0.1 mm. Receptaculum seminis (Fig. 216) with a big nodulus, and numerous striae on cornu.

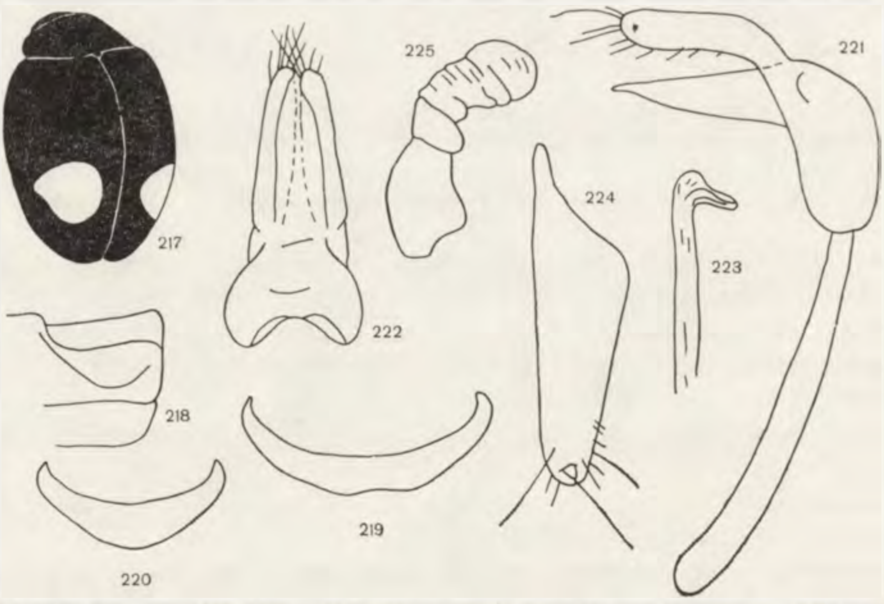
In external appearance the species resembles *S.* (*N.*) *redtenbacheri* MULS. very much, but the structure of the male genitalia is completely different and similar to that in *S.* (*N.*) *bipunctatus*.

It was collected mainly on southern slopes in mountain steppes.

Scymnus (*Nephus*) *bipunctatus* KUGEL.

Distribution of this species has not been studied in detail, it has been recorded from Mongolia only once (BIELAWSKI 1975).

Body quite strongly convex in the shape of an oval. Head black. Pronotum black with anterior margin very narrowly light. Elytra black with a large brownish-red spot situated at one-third of the length from the apex (Fig. 217).



Figs. 217–225. *Scymnus* (*N.*) *bipunctatus* KUGEL. 217 — outline and pattern of body; 218 — femoral line; 219 — last sternite of male; 220 — last sternite of female; 221–222 — male genitalia; 223 — apex of siphon; 224 — genital plate; 225 — receptaculum seminis.

http://rcin.org.pl

The shape of the spot irregular, but circular in outline. The size of the spot different in particular individuals. Elytral posterior margin a little lighter. Legs black with tibiae and tarsi yellow-brownish. Underside of body black, only ultimate abdominal segments brownish.

Punctures on head big, bigger than on pronotum, closely arranged. Areas between punctures with well expressed microsculpture. Pronotal punctures small, arranged very sparsely. Surface of pronotum shining. Punctures on elytra fairly big, deep and closely arranged, more closely than on pronotum. Areas between punctures with quite distinct microsculpture in the form of irregular curved dashes.

Pronotal anterior angles distinctly rounded and produced anteriorly. Lateral margins almost straight. Humeral tubercles on elytra prominent, at the same distance from anterior and lateral margins. Arch of femoral line (Fig. 218) reaching to three-fourth of length of segment and bending towards lateral margin. Last sternite in male (Fig. 219) narrow, strongly curved and at posterior margin slightly notched. Last sternite in female (Fig. 220) strongly curved with apices acute.

Length 1.8–2.4 mm.

Male genitalia as in Figs. 221–222. Apex of penis not reaching to apex of parameres. In lateral view penis straight. Penis 0.15 mm long, 0.05 mm wide in lateral view, 0.04 mm in ventral view. Siphonal apex with a short, but fairly wide process (Fig. 223).

Female genitalia. Genital plates (Fig. 224) narrow and elongate. The greatest width at one-third from base. Base of plate narrow and elongate. Genital plate 0.36 mm long, the greatest width 0.09 mm. Receptaculum seminis (Fig. 225) clearly divided by one broad ring into cornu and nodulus.

Mongolian specimens differ slightly from European ones. Average size of body is bigger and penis is a little narrower in lateral view, but this is within the ranges of individual variability.

The species was collected in mountain steppes on grass and on *Caragana* in particular.

Scymnus (*Nephus*) *changajensis* Biel.

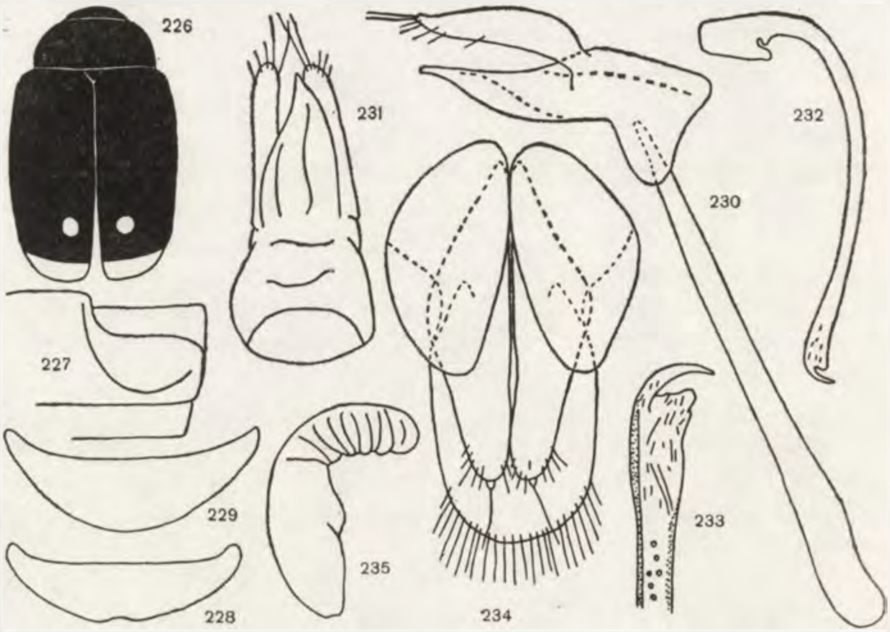
The species has been described from Mongolia (Bielawski 1965) and is known from that country only (Bielawski 1975).

Body strongly depressed, oblong-oval, broadly rounded at the end, uniformly brownish-black, only elytral spot and apices brownish-yellow. Legs brownish. Spot on pronotum small (Fig. 226), almost round, at margins blending a little into ground-colour of elytra, situated at two-thirds of the length of elytra immediately at suture so that its distance from lateral margin is about twice that from suture. Underside of body black.

Punctures on head very big and closely arranged, areas between them

http://rcin.org.pl

with distinct microsculpture. Pronotal punctures slightly smaller, closely arranged, areas between them with distinct microsculpture. Punctures on elytra as big as those on head, shallow, arranged not very closely, areas between them with deep and numerous dashes and therefore the puncturation is indiscernible.



Figs. 226–235. *Scymnus* (*N.*) *changajensis* BIEL. 226 — outline and pattern of body; 227 — femoral line; 228 — last sternite of male; 229 — last sternite of female; 230–231 — male genitalia; 232 — siphon; 233 — apex of siphon; 234 — female genitalia; 235 — receptaculum seminis.

Anterior and lateral margins of pronotum almost straight, edges of lateral margins and of posterior margin delicately reflexed. Humeral tubercles on elytra quite large, faintly produced, situated immediately at lateral and anterior margins. Arch of femoral line (Fig. 227) reaching to four-fifths of the length of the segment and terminating immediately at lateral margin. Last sternite in male (Fig. 228) faintly emarginated with posterior margin distinctly notched. Last sternite in female (Fig. 229) long, with posterior margin almost semicircularly curved.

Body length 1.5–1.6 mm.

Male genitalia as in Figs. 230–231. Penis as long as parameres, a little S-shaped. Penis 0.14 mm long, 0.04 mm wide in lateral view, 0.06 mm wide in ventral view. Siphon (Fig. 232) large, massive, with a big sack. Apical end of siphon in the form of a thorn (Fig. 233).

Female genitalia as in Fig. 234. Genital plates elongate, widest at mid-

http://rcin.org.pl

length. Genital plate 0.28 mm long, the greatest width 0.07 mm. Receptaculum seminis (Fig. 235) with a very big nodulus which is longer than cornu. Surface of cornu with few, but deep striae.

In external appearance, particularly in the size and in the depression of body, *Scymnus changajensis* resembles *S.* (*N.*) *kolzei* Ws., a species recorded from western Siberia. However, *S. changajensis* differs from the other species externally by the size and shape of the spot on elytra. In *S. kolzei* the spot is large and strongly elongated longitudinally while in *S. changajensis* it is small and almost circular. In *S. kolzei* nodulus and cornu are of almost the same length while in *S. changajensis* nodulus is longer than cornu. Moreover, both species differ in the shape of receptaculum seminis.

Specimens were collected from the pit-fall traps placed among *Caragana* and *Amygdalus* and swept from plants at water.

Hyperaspis Redtnb.

The genus includes small and medium-size ladybirds. Upper surface of body glabrous, usually strongly shining, black with spots yellow or reddish. Antennae short, 11-jointed, terminal joint usually accreted to the preceding one. Scutellum relatively big. Elytral epipleurae wide with recesses to receive femoral apices. Legs fairly short, claws with an additional tooth at base (Fig. 237). Abdomen consists of 6 visible sternites. Sexual dimorphism in colouration of head and pronotum.

Only two species have been recorded from Mongolia.

Hyperaspis asiatica Lew.

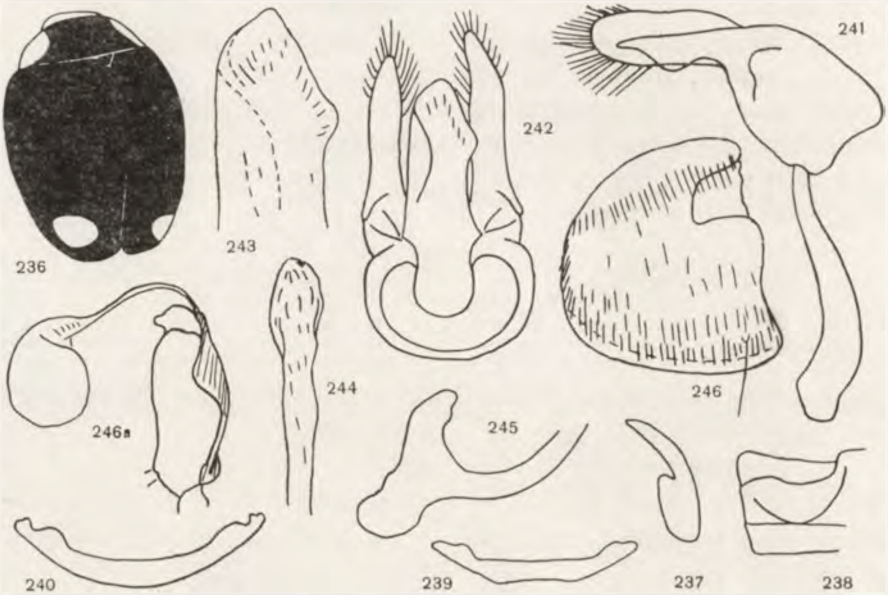
Body shortly oval, quite strongly convex. Head yellow-orange in male, black in female. Pronotum with anterior margin and sides yellow-orange in male, only sides yellow-orange in female. Elytra black with one spot on each (Fig. 236) situated before elytral apex. The spots slightly notched anteriorly, orange, situated closer to lateral margin than to suture. Legs all light in male, only tibiae light in female. Underside black.

Punctures on head small, closely arranged, areas with microsculpture in the shape of reticule. Punctures on pronotum slightly bigger than on head, closely arranged, areas with distinct reticulate microsculpture. Elytral punctures big, deep and arranged very closely, areas between them strongly shining with few scratches and small deep punctures.

Anterior and posterior angles of pronotum rounded. Anterior margin and lateral ones straight. Humeral tubercles on elytra big, far from anterior and lateral borders, but situated closer to lateral border than to anterior one. Elytral lateral borders so inflexed that are invisible from above. Elytra truncate almost straight at back, apices broadly rounded. Femoral line (Fig. 238) incomplete,

http://rcin.org.pl

its arch reaching to posterior margin and running along it over a short distance, end of femoral line closer to lateral margin than to posterior and anterior ones. Last sternite in male (Fig. 239) very short, feebly reflexed, with posterior margin slightly notched, a widening before apices. Last sternite in female (Fig. 240) short, feebly reflexed, posterior margin arcuate.



Figs. 236–246. *Hyperaspis asiatica* Lew. 236 — outline and pattern of body; 237 — claw; 238 — femoral line; 239 — last sternite of male; 240 — last sternite of female; 241–242 — male genitalia; 243 — penis, ventral view; 244 — apex of siphon; 245 — siphonal sack; 246 — genital plate; 246a — receptaculum seminis.

Length 2.6–3.3 mm.

Male genitalia as in Figs. 241–242. Penis straight in lateral view, asymmetrical in ventral view (Fig. 243). Penis 0.27 mm long, 0.06 mm wide in lateral view, 0.12 mm wide in ventral view. Siphon strongly curved, somewhat expanded at apex. Siphonal apex and sack as in Figs. 244–245.

Female genitalia. Genital plates (Fig. 246) very wide, before base strongly irregularly notched, strongly pubescent. Sexual protuberances unusually small. Genital plate 0.33 mm long, 0.31 mm wide. Receptaculum seminis as in Fig. 246a.

The species resembles the European *H. reppenisa* (Hbst.) in external appearance and particularly in the spot pattern on elytra, but differs quite clearly in the male and female genitalia.

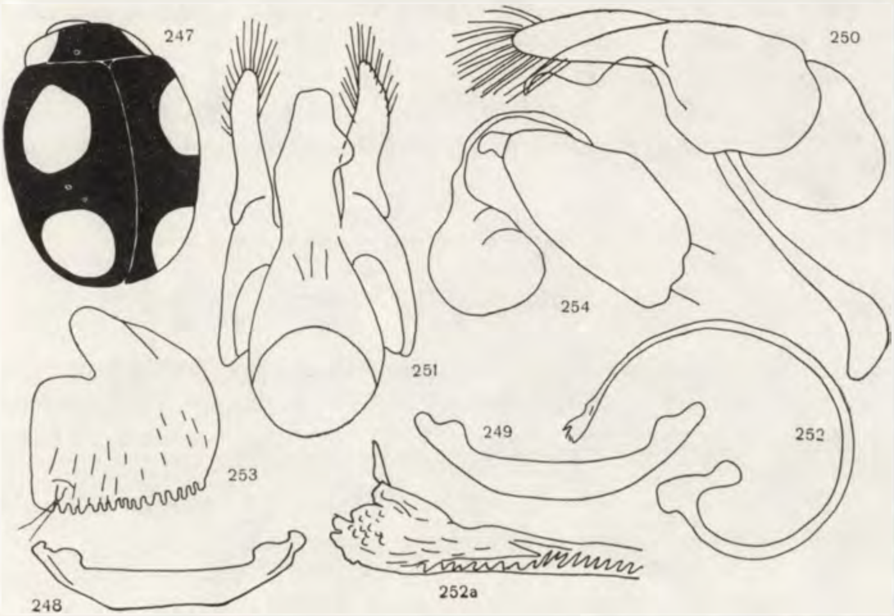
Most probably, it lives on various perennial plants. The species was swept from different plants in a steppe habitat.

http://rcin.org.pl

Hyperaspis leechi Miyat.

The species is known to occur in the Far East (Ussuri, Korea) and China only. In the present paper recorded from Mongolia for the first time.

Body moderately convex in the form of a strongly elongated oval. Head black. Pronotum black with sides orange. Scutellum black. Elytra black with two large, almost circular, orange spots on each (Fig. 247). Posterior spot closer to lateral margin than to suture. Anterior spot slightly elongate anteriorly. Legs and underside of body black, only tarsi brownish.



Figs. 247–254. *Hyperaspis leechi* Miyat. 247 – outline and pattern of body; 248 – last sternite of male; 249 – last sternite of female; 250–251 – male genitalia; 252 – siphon; 252a – apex of siphon; 253 – genital plate; 254 – receptaculum seminis.

Punctures on head small, quite closely arranged at middle, very closely at sides. Areas between punctures with very fine reticulate microsculpture. Pronotal punctures fairly big, closely arranged, areas between them with indistinct microsculpture in the shape of few irregular dashes partly interconnected. Punctures on elytra fairly big, but in irregular size, no differentiation into big and small ones. Punctures arranged fairly closely, closer at sides, areas between them practically smooth.

Pronotal anterior margin straight. Lateral margins almost straight, finely ridged. Anterior angles acute, produced anteriorly, posterior ones obtuse. Lateral borders of elytra finely ridged. Elytra truncate almost straight at back. Humeral tubercles fairly large, faintly marked, far from anterior margin. Arch

http://rcin.org.pl

of femoral line reaching almost to posterior margin and its end situated closer to lateral margin than to posterior one. Last sternite in male (Fig. 248) very faintly reflexed, expanded before apices, posterior margin straight. Last sternite in female (Fig. 249) quite strongly reflexed, posterior margin arcuate.

Length not measured.

Male genitalia as in Figs. 250–251. Penis as long as parameres, at apex narrow and strongly curved in lateral view, in ventral view with apex truncate almost straight and with a fairly big lateral process. Penis 0.44 mm long. 0.15 mm wide in lateral view, 0.23 mm wide in ventral view. Basal part very big. Siphon (Fig. 252) almost circularly curved with a big siphonal sack. Siphonal apex as in Fig. 252a.

Female genitalia. Genital plates (Fig. 253) very wide, at base from inside strongly notched. Posterior margin strongly and closely emarginate. Genital plate 0.53 mm long. 0.46 mm wide. Receptaculum seminis greatly differentiated and presented in Fig. 254.

Nothing is known about the bionomy of the species.

Oxynychus J. LECONTE

The genus includes ladybirds of medium size. Upper surface of body glabrous, strongly shining, usually black with spots, or light with a very complicated pattern. Antennae 11-jointed, short. Claws without a tooth at base (Fig. 259).

In the opinion of many authors this genus should be treated as a subgenus of *Hyperaspis*. Two species are known from Mongolia.

Oxynychus erythrocephalus (F.)

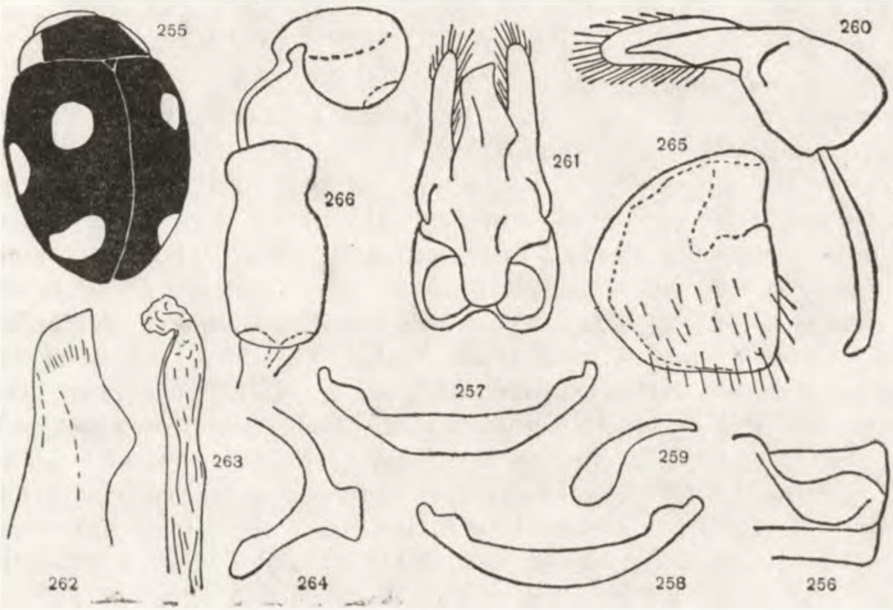
The territory of this species extends from southern Europe to northern Korea. It has been recorded from Mongolia many times.

Body strongly convex in the form of a broad oval, outline somewhat angular. Head yellow in male, black in female. Pronotum black with anterior margin and sides yellow in male, only sides are yellow in female. Elytra black with three yellowish spots on each (Fig. 255). Lateral spot not reaching lateral margin, anterior spot almost circular and close to suture, posterior spot from front is more or less notched and situated closer to lateral margin than to suture. Legs black with tibiae brownish. Underside black.

Punctures on head very small, quite closely arranged, areas with microsculpture in the shape of very closely arranged irregular and interconnected dashes and arranged very closely. Punctures on elytra bigger than on pro otum, arranged quite closely, areas with microsculpture in the shape of numerous irregular dashes arranged mainly radially at punctures and sometimes interconnected.

http://rcin.org.pl

Anterior angles of pronotum feebly rounded, posterior ones strongly rounded. Lateral margin slightly arcuate. Humeral tubercles large and strongly produced, almost at the same distance from lateral margin as from anterior one. Femoral line (Fig. 256) incomplete, arch reaching close to posterior margin, end of femoral line situated closest to anterior margin. Last sternite in male (Fig. 257) and in female (Fig. 258) of almost identical shape, in male posterior margin truncate straight, in female arcuate.



Figs. 255–266. *Oxynychus erythrocephalus* (F.). 255 — outline and pattern of body; 256 — femoral line; 257 — last sternite of male; 258 — last sternite of female; 259 — claw; 260–261 — male genitalia; 262 — penis, ventral view; 263 — apex of siphon; 264 — siphonal capsule; 265 — genital plate; 266 — receptaculum seminis.

Length 2.5–4.0 mm.

Male genitalia as in Figs. 260–261. Penis slightly curved when viewed laterally, when viewed from below (Fig. 262) it is concave at one side and convex at the other, apex truncate, almost acutely. Penis 0.3 mm long, 0.09 mm wide in lateral view, 0.15 mm wide in ventral view. Siphon strongly reflexed, slender. Siphonal apex and siphonal capsule given in Figs. 263–264.

Female genitalia. Genital plates (Fig. 265) very wide, from inside before base irregular, deeply notched. Sexual protuberances very small, pubescence poor. Genital plate 0.4 mm long, 0.34 mm wide. Receptaculum seminis as in Fig. 266.

In external appearance the species is identical to *O. gyotokui* MIYAT. — a species occurring in Japan.

http://rcin.org.pl

The species was collected by sweeping from various plants and taken from pit-fall traps in various steppe habitats (mountain steppe with rich vegetation, dry mountain steppe, *Caragana* steppe, sandy *Caragana* steppe, grassy mountain steppe). It frequently occurs on *Caragana*.

Oxynychus alexandrae Ws.

The species was described from Mongolia and reported also from Turkestan and Afghanistan (Mader 1955). The present writer has not seen any specimen from Mongolia, so the species described below is after Mader.

"Ziemlich breit eiförmig, vorn gerundet abgestutzt, hinten breiter abgerundet, mässig gewölbt, glänzend. Unterseite dunkel rotbraun. Fühler und Beine rötlich gelbbraun. Kopf einfarbig, weisslichgelb (Männchen) oder kastanienbraun, mit einem schmal dreieckigen, nach unten zugespitzten gelben Fleck jederseits am Augenrande vom Scheitel bis zur Fühlerwurzel (Weibchen). Halsschild auf der Scheibe hell kastanienbraun, ein breiterer Seitensaum, der oft mit einigen bräunlichen Punkte versehen ist, ein schmaler Vorderrandsaum, mit dem eine abgekürzte Mittellinie in Verbindung steht, und eine kleine Schrägmakel jederseits blassgelb. Schildchen dunkel. Flügeldecken ähnlich wie der Halsschild fein und verloschen punktiert, auf der Naht fein schwarz gesäumt, sonst weisslichgelb mit kastanienbrauner Zeichnung: eine grosse zackige Quermakel hinter der Basis bis vor die Mitte, eine breite, gemeinschaftliche, an den Rändern zackige Querbinde unmittelbar hinter der Mitte, ein gemeinschaftlicher Querfleck, welcher die Spitze einnimmt, und ein breiter Nahtsaum hell kastanienbraun. Letzterer beginnt breit in 1/4 der Länge. Von der gelben Grundfläche bleibt übrig: ein gemeinschaftlicher, ziemlich quadratischer Fleck am Schildchen, ein damit zusammenhängender Saum an der Basis, ein feiner Seitenaum, welcher vor der Mitte in eine Querbinde mit zackigen Rändern bis nahe an die Naht erweitert ist, sowie eine Querbinde, in 3/4 der Länge. L. 2,5–3 mm".

In external appearance the species is very similar to *H. transversoguttata* Ws. occurring in the Caucasus and in Turkestan.

Pharoscymnus Bedel

The genus includes small ladybirds, usually dark coloured with light spots or light with a dark, usually complicated pattern. Eyes pubescent. Antennae 10-jointed. Terminal segment of maxillary palps strongly elongate. Upper surface of body finely pubescent. Abdomen consists of 5 visible segments (Fig. 270).

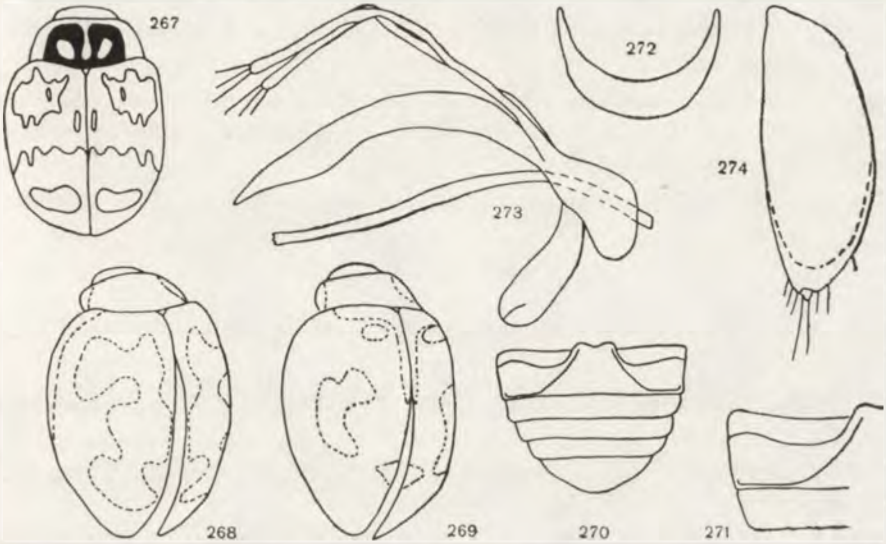
Only one species has been recorded from Mongolia.

http://rcin.org.pl

Pharoscymnus brunneosignatus Mader

The species was described from the desert Gobi (China) by Mader (1949). From Mongolia it was first reported by Bielawski (1975).

Body moderately convex, oval. Outline of elytra almost circular. Head brownish-black. Pronotum brownish-black with sides lighter. Elytra yellowish with brownish irregular spots (Figs. 268–269). Outline of spots indistinct and



Figs. 267–274. 267 — *Oxynychus alexandrae* Ws., outline and pattern of body; 268–274 — *Pharoscymnus brunneosignatus* Mad.; 268–269 — outline and pattern of body; 270 — abdomen; 271 — femoral line; 272 — last sternite of female; 273 — male genitalia; 274 — genital plate.

in particular specimens the spots are of various sizes, interconnected or evanescent. Elytral base from humeral tubercles and suture in anterior half, brownish. On anterior half near base in the middle a small brownish spot very frequently confluent with base. At mid-length there is another spot, made of two, somewhat C-shaped. This spot may often be connected with the triangular spot at suture. They may diffuse or interconnect. Legs light brownish. Underside of body brownish, only metasternum and the middle of first abdominal segments darker.

Punctures on head quite big, sparsely arranged, areas between them with shallow indistinct microsculpture. Pronotal punctures small, shallow, sparsely arranged and hardly visible due to well developed microsculpture in the form of very numerous irregular dashes, often interconnected. Punctures on elytra very poorly discernible, area covered with irregular dashes, scratches and very minute deep punctures.

Anterior angles of pronotum broadly rounded and produced anteriorly. Posterior angles obtuse. Lateral margins slightly arcuate at front, straight at

http://rcin.org.pl

back. Humeral tubercles fairly big, faintly visible, closer to anterior margin than to lateral one. Sides of elytra distinctly and quite broadly reflexed. Elytral apices almost in the form of a right angle. Arch of femoral line (Fig. 271) reaching to posterior margin and running along it to lateral margin and inflexing slightly before it. Last sternite of female (Fig. 272) lunulate.

Length 2–2.5 mm.

Male genitalia as in Fig. 273. Penis 0.53 mm long, 0.07 mm wide in lateral view (the only male in the collection with the genitalia faintly sclerotized).

Female genitalia. Shape of genital plates (Fig. 274) strongly oblong. End of genital plates strongly sclerotized. Sexual tubercles big, pubescence poor. Genital plate 0.4 mm long, 0.15 mm wide.

Ph. brunneosignatus is the only species of the genus *Pharoscymnus* that occurs so far towards northern-east.

The species was collected in various habitats and live most probably on *Tamarix*.

Chilocorus Leach

This genus includes ladybirds that are fairly big, of circular shape, strongly convex and with upper surface strongly shining. Antennae 8-jointed. Pronotal base not adjacent to elytral base along the entire width. Sides of elytra reflexed horizontally.

Four species are known from Mongolia, *Ch. rubidus* not found recently.

Chilocorus rubidus Hope

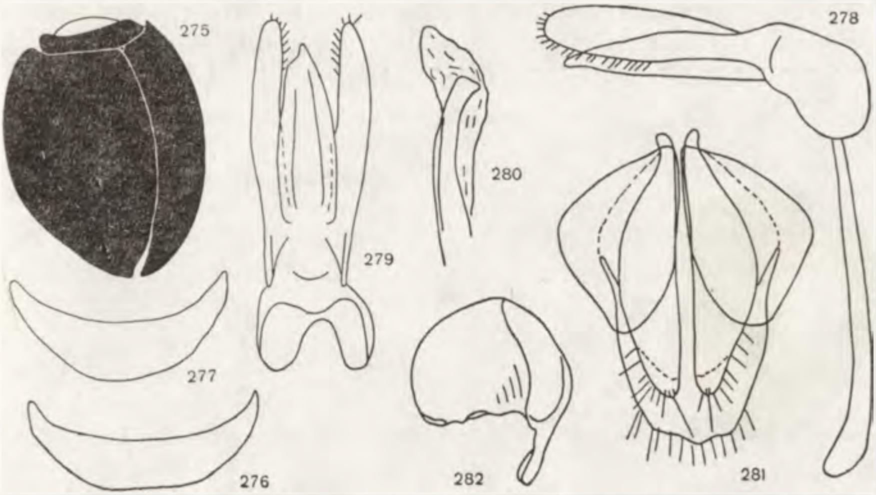
The species was described from Nepal; in Asia it is well known as a predator feeding on *Aspidiotus*. Form Mongolia recorded by Crotch (1874). The present writer has not seen any specimens from Mongolia and the following description has been based on specimens from Korea.

Body strongly convex forming as if a cone, of almost circular shape. Head, pronotum and scutellum black. Elytra black, each with a spot of various sizes, oblong, dark red (Fig. 275). At sides the spot blending frequently into the ground-colour so the elytra look as if they were gradually lighter from sides towards suture. Legs black or brownish-black. Underside of body red-brownish, sometimes prosternum and mesosternum being darker.

Punctures on head very big and very closely arranged, areas shining. Pronotal punctures small and arranged very sparsely, areas shining. Sides of pronotum with short, sparse pubescence, punctures large and closely arranged. Punctures on elytra of similar size as those on pronotum, sparsely arranged, on elytral lateral reflexions large and closely arranged. Areas between punctures smooth.

http://rcin.org.pl

Anterior angles of pronotum arcuate. Sides of pronotum reflexed so strongly that lateral margin is directed towards front. Lateral margins straight. Anterior and posterior margins broadly rounded. Humeral tubercles on elytra large, strongly produced, situated twice as close to anterior margin as to lateral on.



Figs. 275–282. *Chilocorus rubidus* HOPE. 275 — outline and pattern of body; 276 — last sternite of male; 277 — last sternite of female; 278–279 — male genitalia; 280 — apex of siphon; 281 — female genitalia; 282 — receptaculum seminis.

Arch of femoral line reaching to posterior margin and running along it towards lateral margin without reaching to it. Last sternite in male (Fig. 276) short, faintly curved with posterior margin truncate almost straight. Last sternite in female (Fig. 277) fairly long with margins evenly arcuate.

Length 5.8–7.2 mm.

Male genitalia as in Figs. 278–279. Penis slightly shorter than parameres, straight in lateral view, in ventral view feebly asymmetrically notched before apex. Pubescence on parameres poor and very short. Penis 0.65 mm long, 0.15 mm wide in lateral view, 0.2 mm wide in ventral view. Siphon strongly reflexed in posterior half. Siphonal apex as in Fig. 280.

Female genitalia as in Fig. 281. Genital plates narrow, strongly elongate, apices strongly sclerotized. Genital plate 0.98 mm long, 0.3 mm wide. Receptaculum seminis as in Fig. 282.

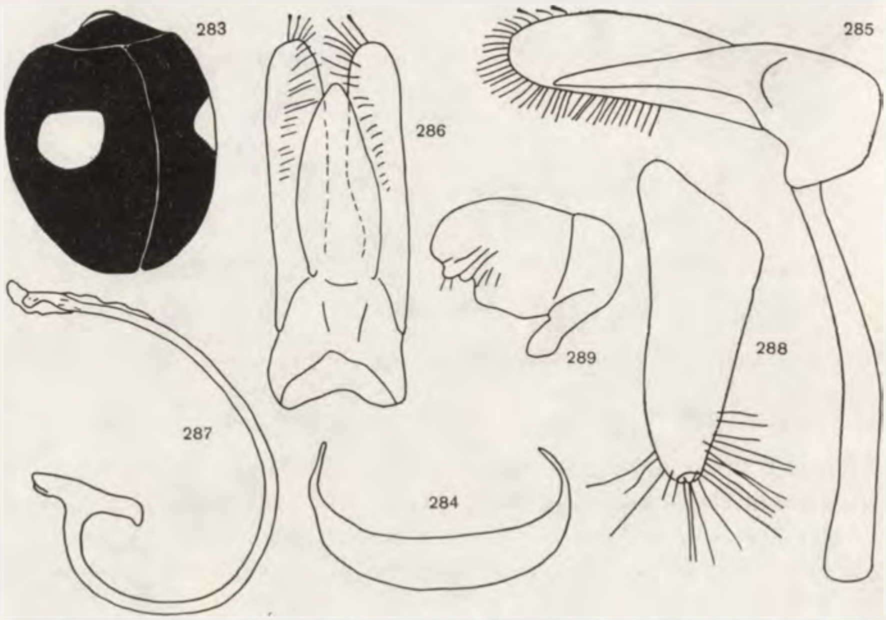
In external appearance the species is distinctly different from others belonging to this genus.

Chilocorus renipustulatus (SCRIBA)

The territory of this species is very wide and extends from western Europe to eastern Asia. From Mongolia it was recorded by BIELAWSKI (1975), and the species reaches here the eastern limit of its distribution.

http://rcin.org.pl

Body almost circular, strongly convex, the highest poiant of the convexity almost at mid-length. Lateral margins of the convexity and lower surface of body form an acute angle. Head, pronotum and elytra black. Each elytron with a fairly big, red spot situated at their mid-length (Fig. 283). The shape of the spot most frequently circular, but it may be slightly widened transversely, the size of the spot varies in particular individuals only slightly. Spot closer to suture than to lateral margin. Legs black. Underside of body black, only abdomen reddish but except for the median part of the first segment.



Figs. 283–289. *Chilocorus renipustulatus* (Scrb.). 283 — outline and pattern of body; 284 — last sternite of male; 285–286 — male genitalia; 287 — siphon; 288 — genital plate; 289 — receptaculum seminis.

Punctures on head large, deep and closely arranged, areas smooth. Pronotal punctures very small and sparsely arranged, areas smooth. Punctures at sides of pronotum large and closely arranged, areas with feebly expressed microsculpture in the form of reticule. Elytral punctures very small but distinct, sparsely arranged, on lateral reflexions large and closely arranged, areas smooth.

Pronotal sides narrow and directed towards front reaching almost to anterior margin of head. Anterior and posterior angles broadly rounded. Humeral tubercles big and distinct, near anterior margin. Femoral line reaching almost to posterior margin and running farther parallel to it, terminating near lateral margin. Last sternite in male (Fig. 284) with basal processes narrow and very long, posterior margin arcuate. Last sternite in female feebly curved, with apices narrow and acute.

http://rcin.org.pl

Length 4–5 mm.

Male genitalia as in Figs. 285–286. Penis shorter than parameres, almost straight, with apex rounded in ventral view. Penis 0.45 mm long, 0.13 mm wide in lateral view, 0.2 mm wide in ventral view. Siphon (Fig. 287) strongly curved semicircularly with apex reflexed into a short "snout".

Female genitalia. Genital plates (Fig. 288) arranged vertically, elongate, with small sexual tubercles, base truncate obliquely. Genital plate 0.58 mm long, 0.21 mm wide. Receptaculum seminis as in Fig. 289.

In external appearance the species resembles a number of species occurring mainly in Japan. In respect of the size of elytral spot it most closely resembles *Ch. esakii* KAM.

The species was swept in various habitats.

Chilocorus bipustulatus (L.)

The species occurs almost all over the Palaearctic. From Mongolia recorded only by WEISE (1890). No specimens have been found recently. The following description is based on European specimens.

Body circular, the highest point of convexity situated distinctly before mid-length. Lateral margins of the convexity and lower surface of body forming an acute angle, but it is more obtuse than in *Ch. renipustulatus*. Head brownish-reddish. Pronotum black, occasionally slightly lighter at middle. Elytra black with three brownish-reddish spots arranged transversely as if in a band (Fig. 290). Spots situated immediately before mid-length of elytra and frequently confluent. Legs black, sometimes femora of the first pair slightly lighter. Underside of body black, only lateral margins of the first two abdominal segments and the other segments, brownish.

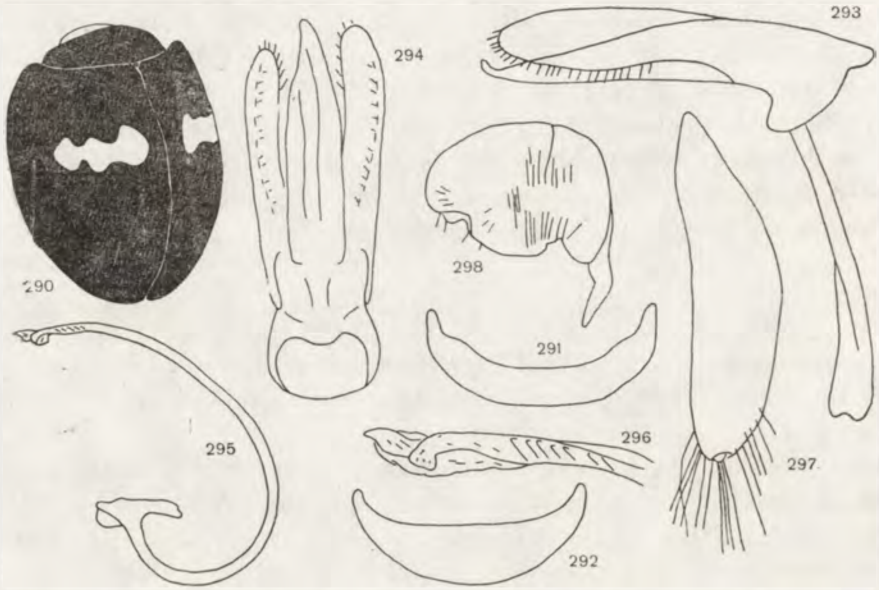
Punctures on head large, but shallow, arranged sparsely at middle and closer at sides. Areas with distinct microsculpture in the form of reticule so that the head is dull. Punctures on pronotum quite big and closely arranged, of similar size as those on head. Areas with faintly expressed microsculpture which is more distinct at sides and forms a regular reticule. Elytral punctures small and sparsely arranged, gradually bigger and closely arranged towards lateral margins. Areas between punctures smooth.

Lateral margins of pronotum strongly arcuate. Anterior and posterior angles broadly rounded. Lateral borders of elytra narrowly reflexed. Humeral tubercles very big, strongly produced, and situated near to base. Arch of femoral line reaching to posterior margin, farther running parallel to it, then slightly deviating before end and terminating close to lateral margin. Last sternite in male (Fig. 291) feebly curved with posterior margin slightly arcuate. Last sternite in female (Fig. 292) fairly long, processes short and wide, posterior margin strongly arcuate.

Length 3–4 mm.

http://rcin.org.pl

Male genitalia as in Figs. 293–294. Penis almost as long as parameres, in lateral view almost straight. Penis 0.5 mm long, 0.12 mm wide in lateral view, 0.13 mm wide in ventral view. Siphon (Fig. 295) slender, strongly reflexed in basal part, apex in the form of a faintly curved "snout" (Fig. 296).



Figs. 290–298. *Chilocorus geminus* Zasl. 290 – outline and pattern of body; 291 – last sternite of male; 292 – last sternite of female; 293–294 – male genitalia; 295 – siphon; 296 – apex of siphon; 297 – genital plate; 298 – receptaculum seminis.

Female genitalia. Genital plates (Fig. 297) elongate, sexual calli small. Genital plate 0.55 mm long, 0.15 mm wide. Receptaculum seminis as in Fig. 298.

In external appearance the species resembles *Ch. geminus* and is closely related to it.

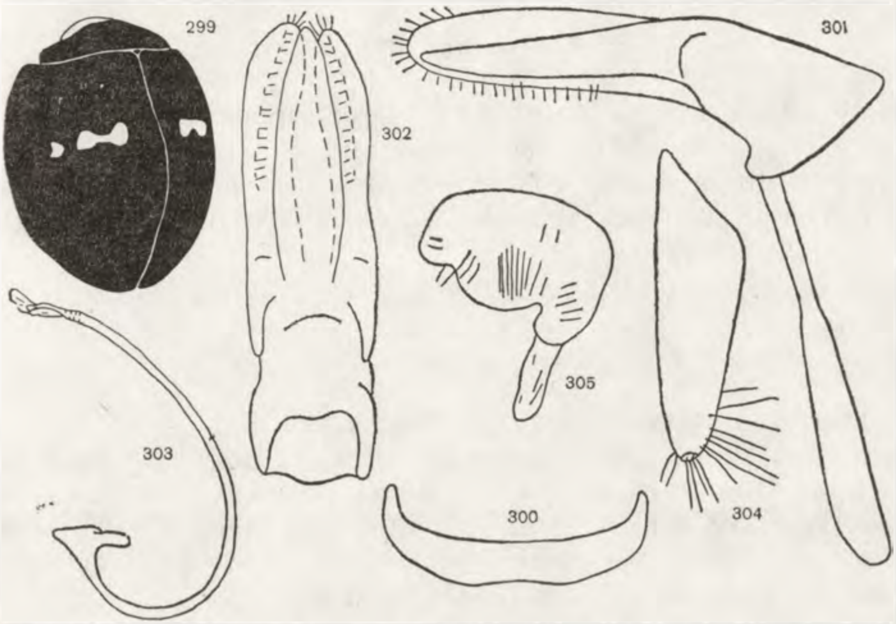
Chilocorus geminus Zasl.

The species was described from Ferghana Valley, Syr-Daria, southern Turkmenia and from China (Zaslavskij 1962). From Mongolia recorded by Bielawski (1975).

Body almost circular, the greatest convexity at mid-length. Lateral convexities and lower surface of body forming an acute angle. Head light red-brownish, the rest of body brownish-red, only elytral and epipleural margins and the middle of metasternum, black-brownish. Elytra with three light spots, confluent most frequently, arranged transversely and situated immediately before mid-length (Fig. 299).

http://rcin.org.pl

Punctures on head small, shallow, sparsely arranged, areas with faintly expressed microsculpture. Pronotal punctures small, shallow, sparsely arranged, at sides slightly bigger, but sparsely arranged. Areas between punctures almost smooth, with hardly discernible microsculpture which is slightly more distinct at sides, yet still faintly visible. Punctures on elytra small and quite closely arranged, bigger than on pronotum. At elytral sides the punctures are deeper and bigger, arranged more closely than on disc. Areas between punctures practically smooth, but surface shining only faintly.



Figs. 299–305. *Chilocorus bipustulatus* (L.). 299 — outline and pattern of body; 300 — last sternite of male; 301–302 — male genitalia; 303 — siphon; 304 — genital plate; 305 — receptaculum seminis.

Anterior angle of pronotum broadly rounded, posterior one very broad and practically indiscernible because lateral margin passes into posterior one arcuately. Humeral angles of elytra clearly produced. Lateral margin of elytra quite broadly reflexed. Arch of femoral line reaching very closely to posterior margin and farther on running parallel to it. Last sternite in male (Fig. 300) with posterior margin almost straight. Last sternite in female of regular shape.

Length 4–5 mm.

Male genitalia as in Figs. 301–302. Penis longer than parameres, in lateral view hooked at apex, in ventral view slightly asymmetrically notched before apex. Penis 0.69 mm long, 0.17 mm wide in lateral view, 0.15 mm wide in ventral view. Siphon (Fig. 303) slender, all curved, in posterior half semicircularly. Siphonal apex as in Fig. 303.

Female genitalia. Genital plates (Fig. 304) strongly elongate with no

http://rcin.org.pl

distinct truncation before base, sexual calli fairly big, pubescence thick and long. Genital plate 0.7 mm long, 0.2 mm wide. Receptaculum seminis as in Fig. 305.

The species clearly differs from *Ch. bipustulatus* by size and shape of the body, the shape of pronotal sides, lateral reflexion and puncturation of elytra, and by the shape of penis.

It was collected in various habitats.

Exochomus Redtb.

Body convex, oval or circular, with upper surface faintly shining. Surface of body may be glabrous or covered with very fine pubescence either entirely or partly. Antennae 9-jointed. Pronotal base adhers along the whole width to elytral base. Lateral borders of elytra strongly reflexed, reflexion horizontal. Femora elongate.

Five species recorded from Mongolia.

Exochomus semenovi Ws.

The species described and known from Mongolia only.

Body feebly convex, depressed, in the form of a broad oval. Head yellowish in male, black in female and only labrum is yellow. Pronotum yellow or yellow-orange. Elytra black (Fig. 306) with very strong metallic bluish or greenish-bluish gleam. Legs yellowish. Underside of body black, only prosternum and the last three abdominal segments light.

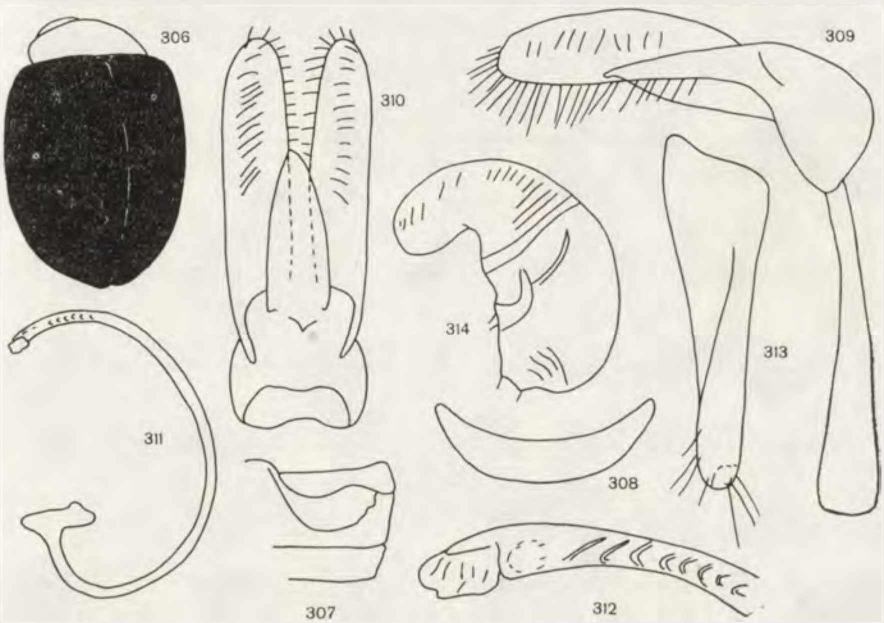
Punctures on head small, sparsely arranged, areas with shallow yet distinct microsculpture in the shape of reticule. Punctures on pronotum small, smaller than on head, shallow and sparsely arranged, areas with shallow yet distinct microsculpture in the shape of reticule. Elytral punctures of medium size, shallow, sparsely arranged, hardly visible due to exceptionally deep and well-developed reticulate microsculpture. Mesh of the reticulate microsculpture is so dense that the surface of elytra looks as if it were tubercular.

Anterior margin of pronotum almost straight, sides also almost straight. Anterior angles rounded, produced anteriorly. Posterior angles very broadly rounded. Sides of pronotum markedly ridged. Humeral tubercles on elytra big, strongly protruding, at the same distance both from anterior and from lateral margins. Lateral reflexion of elytra horizontal, very narrow. On the surface of elytra, particularly in posterior half, very fine pubescence. Femoral line (Fig. 307) complete, its arch reaching to three-fourths of the length of the segment, the line reaching to anterior margin. Last sternite in male (Fig. 308) short, feebly curved, posterior margin arcuate. Last sternite of female lunulate.

Length 3.5–4 mm.

http://rcin.org.pl

Male genitalia as in Figs. 309–310. Penis reaching to mid-length of parameres, straight and wide in lateral view, in ventral view slightly asymmetrically notched at apex. Penis 0.32 mm long, 0.15 mm wide in lateral view, 0.11 mm wide in ventral view. Siphon (Fig. 311) strongly curved semicircularly, apex as in Fig. 312.



Figs. 306–314. *Exochomus semenowi* Ws. 306 — outline and pattern of body; 307 — femoral line; 308 — last sternite of male; 309–310 — male genitalia; 311 — siphon; 312 — apex of siphon; 313 — genital plate; 314 — receptaculum seminis.

Female genitalia. Genital plates (Fig. 313) strongly elongate, the greatest width at base, internal margin very faintly sclerotized. Genital plate 0.65 mm. long, 0.2 mm wide. Receptaculum seminis as in Fig. 314.

In respect of the colouration of its body the species differs distinctly from others, only *E. kirgizorum* Bar. occurring in Turkestan has identical colouration. Other characters are very similar or identical and therefore they may be the same species.

Exochomus mongol Bar.

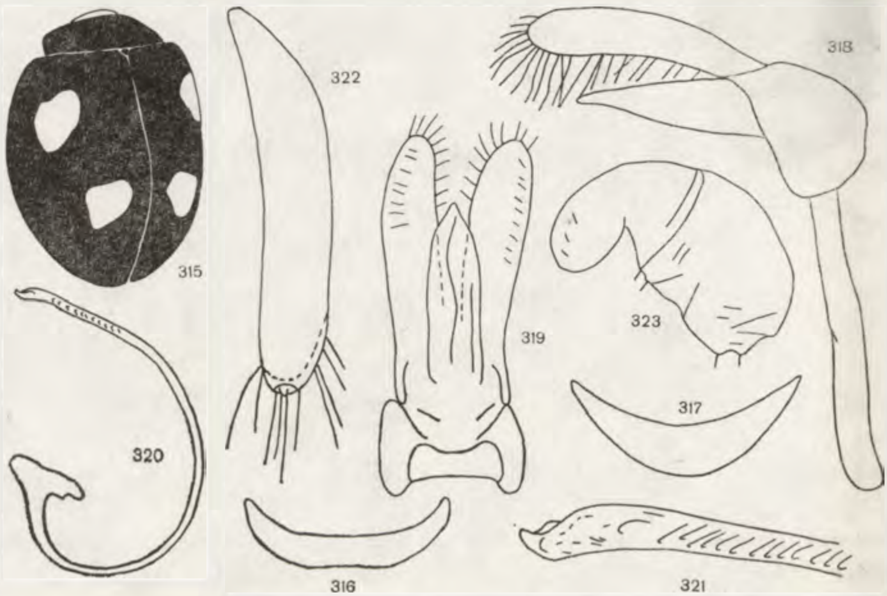
The species has been described and is known from Mongolia only. Recorded many times.

Body broadly oval, almost circular, quite strongly convex. All body with legs black, only elytra with two reddish spots on each (Fig. 315). The first spot immediately below humeral tubercle, near lateral margin. Its shape is almost

http://rcin.org.pl

circular, but anterior margin slightly notched. The other spot circular, situated near suture, immediately beyond mid-length of elytron.

Punctures on head of medium size, distinct, sparsely arranged, areas with distinct reticulate microsculpture. Punctures on pronotum of the same size as those on head, sparsely arranged, areas with reticulate microsculpture, but not as well marked as that on head. Punctures on elytra quite big, closely arranged, areas with fairly distinct microsculpture in the form of reticule, but frequently with mesh broken.



Figs. 315–323. *Exochomus mongol* BAR. 315 — outline and pattern of body; 316 — last sternite of male; 317 — last sternite of female; 318–319 — male genitalia; 320 — siphon; 321 — apex of siphon; 322 — genital plate; 323 — receptaculum seminis.

Anterior margin of pronotum clearly reflexed anteriorly. Anterior angles feebly rounded, produced anteriorly. Posterior angles very broadly rounded. Lateral margins of pronotum arcuate. Humeral angles of elytra produced. Humeral tubercles very big and protruding very strongly, closer to anterior margin than to lateral one. Lateral reflexions of elytra distinct and fairly wide. Femoral line complete, its arch reaching to three-fourths of length of segment. Last sternite in male (Fig. 316) short and very faintly curved, posterior margin slightly notched. Last sternite in female (Fig. 317) curved quite strongly, with acute apices.

Length 4–4.5 mm.

Male genitalia as in Figs. 318–319. Penis slightly shorter than parameres which are quite narrow and strongly pubescent. Penis 0.42 mm long, 0.12 mm

http://rcin.org.pl

wide in lateral view, 0.12 mm wide in ventral view. Siphon (Fig. 320) semicircularly curved. Siphonal apex as in Fig. 321.

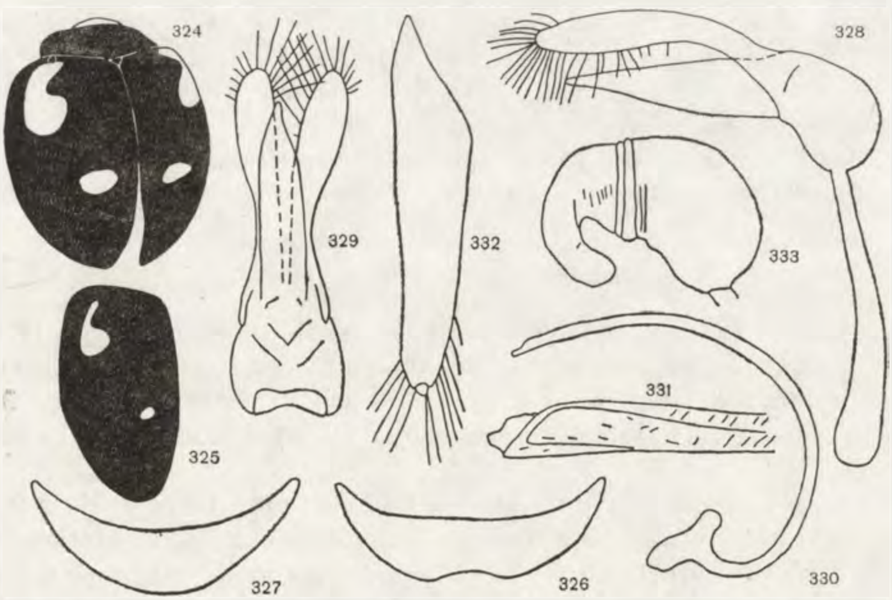
Female genitalia. Genital plates (Fig. 322) strongly elongate, slightly curved at base, ends of plates strongly sclerotized, very faintly sclerotized from mid-length towards base. Genital plate 0.75 mm long, 0.15 mm wide. Receptaculum seminis as in Fig. 323.

In external appearance and in a number of characters the species is exceptionally similar to *E. georgi* FÜRSCH, a species described from Korea (FÜRSCH 1960, 1963) and probably both are synonymous.

Specimens of this species were collected in various habitats, swept off plants.

Exochomus quadripustulatus (L.)

Body evenly convex so that the highest point of convexity at mid-length, shape almost circular. Head black, sometimes labrum brownish. Pronotum black with angles occasionally slightly lighter. Scutellum black. Elytra black, sometimes dark brownish. On each elytron two reddish spots (Fig. 324). Anterior spot surrounds the humeral tubercle, its size varies in particular specimens (Fig. 325). Posterior spot usually slightly widened transversely, sometimes almost circular. Legs black, only tarsi and femur-tibia articulations brownish.



Figs. 324–333. *Exochomus quadripustulatus* (L.). 324 – outline and pattern of body; 325 – pattern of elytra; 326 – last sternite of male; 327 – last sternite of female; 328–329 – male genitalia; 330 – siphon; 331 – apex of siphon; 332 – genital plate; 333 – receptaculum seminis.

http://rcin.org.pl

Underside of body black, only anterior part of elytral epipleurae and margins of segments 2–4 and all ultimate abdominal segment, reddish-brownish.

Punctures on head small, shallow and sparsely arranged, areas between them with distinct reticulate microsculpture. Punctures on pronotum slightly bigger than those on head, sparsely arranged, areas with shallow and indistinct microsculpture in the shape of reticule which is more distinct at sides. Elytral punctures small, sparsely arranged, at lateral margins big and closely arranged, areas with indiscernible, obliterate microsculpture.

Anterior margin of pronotum slightly reflexed. Lateral margins faintly arcuate. Anterior and posterior angles broadly rounded. Lateral reflexion of elytra clearly visible from above, widest at the back. Humeral tubercles large, strongly protruding, closer to anterior margin than to lateral one. Arch of femoral line reaching to beyond three-fourths of the length of the segment. Last sternite in male (Fig. 326) with posterior margin notched. Last sternite in female (Fig. 327) evenly curved lunulately. Spiculum gastrale 1.05 mm long.

Length 3–5 mm.

Male genitalia as in Figs. 328–329. Penis shorter than parameres, when viewed from below at one side slightly notched before apex, narrow with margins almost parallel, apex narrowed and curved a little. Penis 0.57 mm long. 0.15 mm wide in lateral view, 0.13 mm wide in ventral view. Siphon (Fig. 330) strongly curved with a wide but small siphonal sack. Siphonal apex (Fig. 331) straight, slightly widened.

Female genitalia. Genital plates (Fig. 332) straight, strongly elongate, at one-third from base obliquely truncate. Genital plate 1.2 mm long, 0.2 mm wide. Receptaculum seminis (Fig. 333) with a narrow, strongly curved cornu, nodulus strongly widened.

Nothing is known about the bionomy of the species in Mongolia. It may be assumed that there, as in Central Europe, it lives on coniferous trees.

Exochomus nigromaculatus (Goeze)

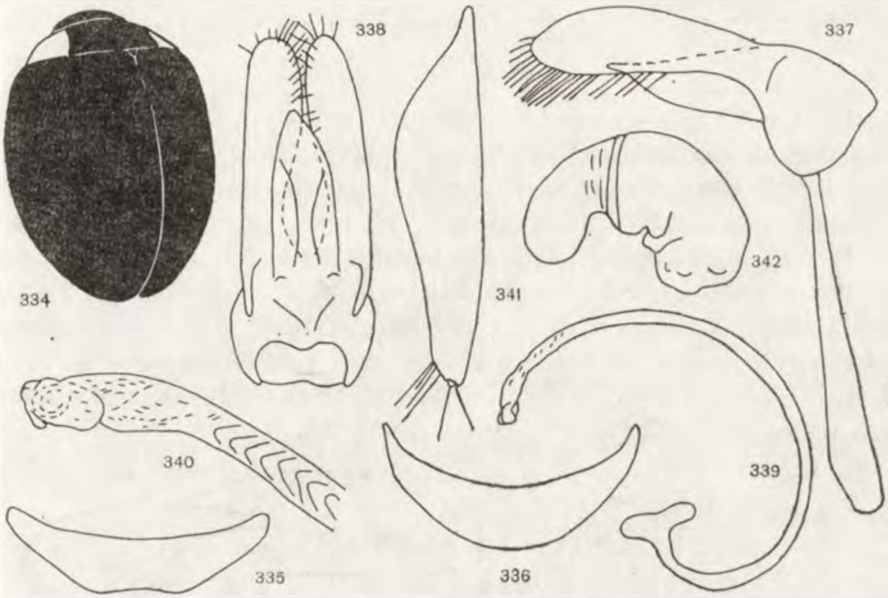
The species was recorded from Europe under the name *E. flavipes* (Thbg.); studies by Fürsch (1961) explaining the problem. The distribution of the species has not been investigated sufficiently; up till now it has been assumed that it occurs in Europe only. In the present paper recorded from Mongolia for the first time.

Body strongly convex, in the shape of a broad oval. Head black in female, with anterior part yellow-orange in male. Inner edge of light colouration evenly arcuate. Scutellum black. Elytra black (Fig. 334), occasionally with a slightly bluish shade. Legs orange-yellow. Underside of body black, only sides of the second abdominal segment and segments 3 and 4, light, sometimes the ultimate segment light as well.

Punctures on head very small, sparsely arranged, hardly discernible.

http://rcin.org.pl

Surface of head dull, with distinct reticulate microsculpture. Punctures on pronotum very small, sparsely arranged, hardly discernible, areas with reticulate microsculpture. Punctures on elytra very small, at margins slightly bigger, sparsely arranged, areas with reticulate microsculpture. Upper surface of body dull.



Figs. 334–342. *Exochomus nigromaculatus* (GOEZE). 334 – outline and pattern of body; 335 – last sternite of male; 336 – last sternite of female; 337–338 – male genitalia; 339 – siphon; 340 – apex of siphon; 341 – genital plate; 342 – receptaculum seminis.

Anterior margin of pronotum slightly reflexed. Lateral margins faintly arcuate. Anterior angles feebly rounded, produced, posterior angles broadly rounded. Margins of pronotum not reflexed. Humeral tubercles big, but faintly produced and situated closer to anterior margin than to lateral one. Elytral lateral margins faintly reflexed, the reflexion restricted to a fairly wide edge. Arch of femoral line reaching to three-fourths of length of segment and ending immediately at anterior margin. Last sternite in male (Fig. 335) with posterior margin slightly notched. Last sternite in female (Fig. 336) strongly curved, with apices acute. Spiculum gastrale 1.25 mm.

Length 4–4.5 mm.

Male genitalia as in Figs. 337–338. Penis shorter than parameres, in lateral view with apex terminated in the form of a short acute point, when viewed from below slightly asymmetrical at apex. Penis 0.33 mm long, 0.15 mm wide in lateral view, 0.13 mm wide in ventral view. Siphon (Fig. 339) quite massive, strongly semicircularly curved. Siphonal apex (Fig. 340) in the shape of a short "snout" surrounded by a lobate process.

http://rcin.org.pl

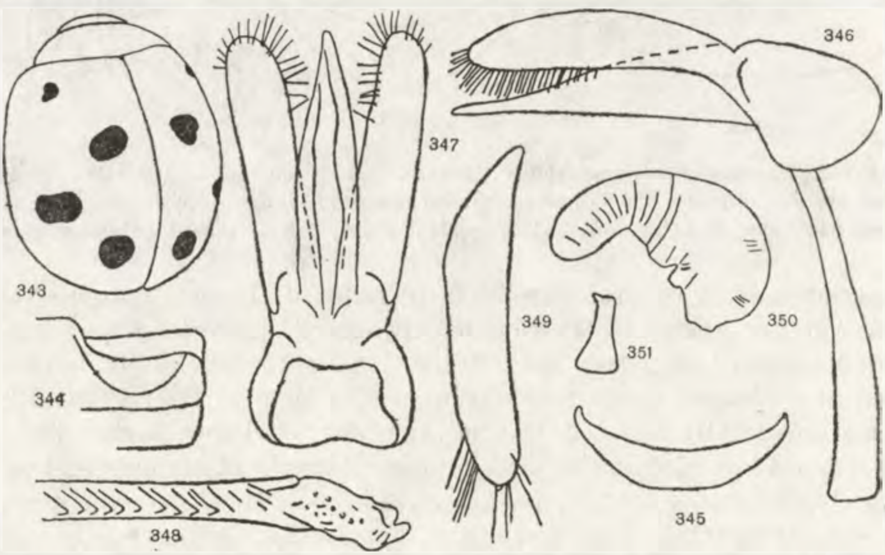
Female genitalia. Genital plates (Fig. 341) elongate, widest at one-fourth from base, base narrowed and slightly elongate. Genital plate 0.78 mm long, 0.17 mm wide. Receptaculum seminis (Fig. 342) with a quite strongly swelled nodulus, cornu fairly wide and curved.

Nothing is known about the bionomy of this species in Mongolia. In Europe it lives in moorland.

Exochomus kiritshenkoi Bar.

Up till now the species known only from Turkestan, Iran and Afghanistan (Mader 1955). In the present paper recorded from Mongolia for the first time.

Body faintly convex, of almost circular shape. Head red in male, black with only labrum red in female. Pronotum in female black and occasionally the very end of anterior angles lighter, in male black with anterior margin and sides reddish. Scutellum black. Elytra reddish with 4 small black spots on each (Fig. 343). Spots arranged after the following pattern 1–1–1–1. The spot on humeral tubercle the smallest, the other three of almost the same shape. Legs reddish with femora black. Underside of body black, only sides of abdominal segments 2 and 3 and the successive ones, reddish.



Figs. 343–351. *Exochomus kiritschenkoi* Bar. 343 — outline and pattern of body; 344 — femoral line; 345 — last sternite of female; 346–347 — male genitalia; 348 — apex of siphon; 349 — genital plate; 350 — receptaculum seminis; 351 — infundibulum.

Punctures on head small, arranged very sparsely, fairly shallow, areas with fine reticulate microsculpture. Pronotal punctures very small and very shallow, arranged very sparsely and hardly discernible, areas slightly as if rugose. Elytral punctures very faintly visible, small, shallow and arranged very

http://rcin.org.pl

sparsely, only at sides slightly bigger, deeper and arranged more closely. Areas between punctures practically smooth, but feebly shining.

Anterior margin of pronotum almost straight. Lateral margins feebly arcuate. Lateral reflexion of pronotum fairly wide and distinct. Anterior margins rounded, produced anteriorly, posterior ones broadly rounded. Ridge of the posterior margin of pronotum before posterior angles distinctly deviating from margin. Humeral tubercles very small and faintly marked, almost at the same distance from lateral margin and from anterior one. Lateral reflexion of elytra marked very strongly, wide and running along the entire length of lateral margin. Lower surface of body quite strongly pubescent. Femoral line (Fig. 344) complete, in the form of a regular arch which is reaching to three-fourths of length of segment. Last sternite in female (Fig. 345) faintly curved.

Length 5.4 mm.

Male genitalia as in Figs. 346–347. Penis a little longer than parameres. Penis straight, in lateral view with apex narrowed and elongate, straight, when viewed from below slightly asymmetrical at apex only. Siphonal apex as in Fig. 348.

Female genitalia. Genital plates (Fig. 349) narrow and long, with base curved a little. Genital plate 0.8 mm long, 0.15 mm wide. Receptaculum seminis (Fig. 350) of a not very regular shape, with a big as if swelled nodulus, infundibulum (Fig. 351) very small.

The species is easily distinguished from others by its characteristic spot-pattern on elytra.

Brumus Muls.

The species includes both small and big ladybirds of greatly varied colouration. Upper surface of body glabrous. Antennae 9-jointed, but the terminal joint with a distinct groove and therefore it seems that the antennae are 10-jointed. Pronotum is contiguous to elytra with its whole width.

Three species are recorded from Mongolia.

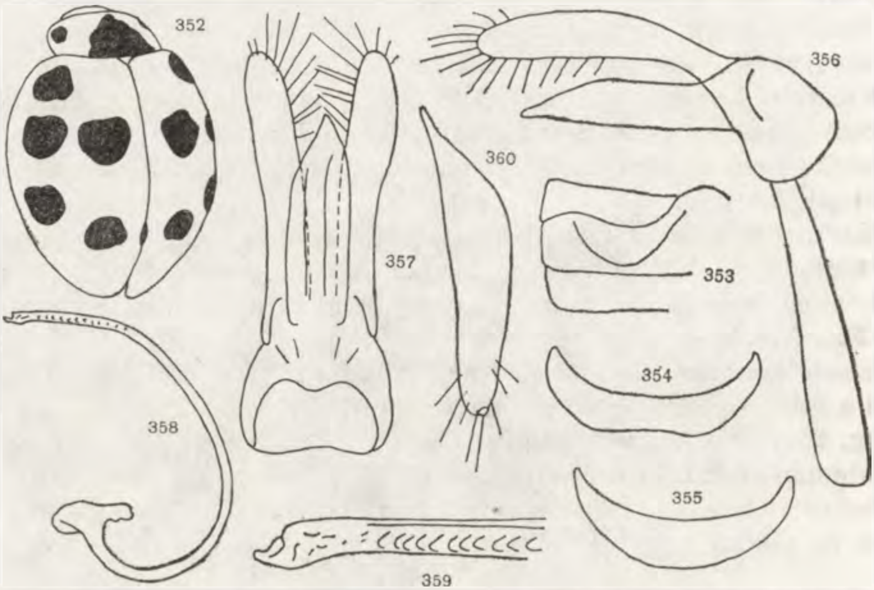
Brumus jacobsoni Bar.

The species was described from Kazakhstan and Mongolia. From Mongolia recently recorded by Bielawski (1975). No new data have been obtained since the species was described and later redescribed by Mader (1955).

Body strongly convex, almost circular so that seen from front it forms as if a hemisphere. Upper surface of body yellowish-brownish with black spots. On pronotum three black spots, two at sides and the big third one at middle, at mid-length strongly narrowing anteriorly and not reaching to anterior margin. In some specimens widening sideways and almost joining lateral spots. Scutellum black. On each elytron 5 spots, all of them almost circular (Fig. 352).

http://rcin.org.pl

The first spot situated on humeral tubercle, the next two immediately before mid-length, in one row, most frequently connected by a narrow band. The fourth spot lies immediately beyond mid-length near lateral margin, the last one shifted slightly backwards in relation to the previous one and situated at suture. At that place the suture is a little darkened. Legs yellow-brownish. Underside of body black, only terminal segments of abdomen are brownish.



Figs. 352–360. *Brumus jacobsoni* Bar. 352 — outline and pattern of body; 353 — femoral line; 354 — last sternite of male; 355 — last sternite of female; 356–357 — male genitalia; 358 — siphon; 359 — apex of siphon; 360 — genital plate.

Punctures on head small, sparsely arranged, areas with distinct yet shallow microsculpture in the form of reticule. Punctures on pronotum small, of similar size as those on head, sparsely arranged, areas with distinct reticulate micro-sculpture. Elytral punctures in the form of fine deep punctures, practically almost indiscernible, area with distinct but irregular reticulate microsculpture.

Anterior angles produced anteriorly. Anterior and posterior angles broadly rounded. Lateral margins arcuate. Humeral tubercles on elytra large, produced quite strongly, at the same distance from anterior and lateral margins. Lateral reflexion of elytra distinct but narrow. Femoral line (Fig. 353) incomplete, arch reaching to near posterior margin and ending immediately at anterior margin. Last sternite in male (Fig. 354) with posterior margin arcuate. Last sternite in female (Fig. 355) curved lunulate, with narrow apices.

Length 3.4–3.8 mm.

Male genitalia as in Figs. 356–357. Penis shorter than parameres, in lateral view from base to two-thirds of length almost evenly wide, then from th

http://rcin.org.pl

sides of parameres as if truncate. Penis 0.4 mm long, 0.09 mm wide in lateral view, 0.1 mm wide in ventral view. Siphon (Fig. 358) strongly curved, its apex as in Fig. 359.

Female genitalia. Genital plates (Fig. 360) with base narrow and elongate. Genital plate 0.66 mm long, 0.15 mm wide. Receptaculum seminis lost during the preparation.

The characteristic pattern of spots makes the species clearly different from others belonging to this genus. In the original description it was given that this species has 5 spots on pronotum; in the specimens studied by the author there are only three. It is possible, however, that the spot situated at the middle of pronotum is nothing else, but a spot formed of three confluent ones and this is indicated by the shape of the spot.

Most probably the species lives on *Tamarix*.

Brumus octosignatus (Gebl.)

From Mongolia recorded by many authors and localities are situated at the eastern border of the range of the species.

Body strongly convex, almost circular. Upper surface of body orange-red. Head light in male, black in female. On pronotum before scutellum one round black spot. In some individuals the spot is of varying size, elongating mainly anteriorly, reaching almost to anterior margin. Scutellum black. On each elytron 4 round black spots (Fig. 361). Spots 1 and 3 near lateral margin, spots 2 and 4 close to suture. In particular specimens the size of spot varies (Fig. 362). Legs light. Underside of body black, only sides and ultimate abdominal segment light in female and male.

Punctures on head small, sparsely arranged, areas with distinct microsculpture in the shape of reticule. Punctures on pronotum of similar size as those on head, sparsely arranged, areas with distinct microsculpture in the form of reticule. Punctures on elytra small, closely arranged, shallower than those on pronotum, areas with shallow yet fairly clear irregular, reticulate microsculpture.

Anterior angles of pronotum feebly rounded, posterior angles strongly rounded. Lateral margins faintly arcuate. Humeral angles of elytra produced a little. Humeral tubercles on elytra not very big and faintly produced, situated slightly closer to anterior margin than to lateral one. Lateral reflexion of elytra very narrow, practically restricted to the width of ridge. Femoral line (Fig. 363) complete, arch reaching almost to posterior margin. Last sternite in male (Fig. 364) very short, irregularly curved, with posterior margin almost straight. Last sternite in female curved regularly, apices slightly rounded.

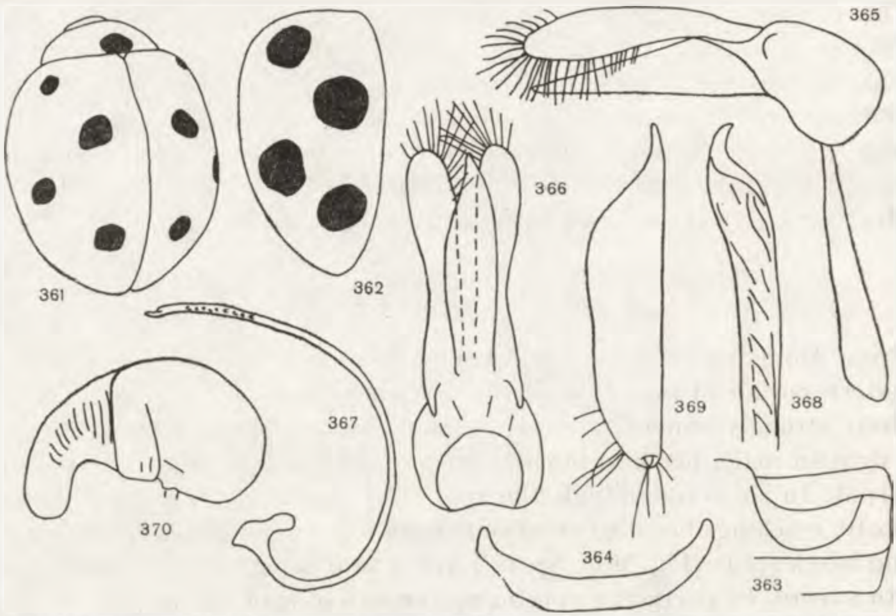
Length 3–4.5 mm.

Male genitalia as in Figs. 365–366. Penis almost as long as parameres, in lateral view its margin from the sides of parameres is oblique almost from base. Penis 0.6 mm long, 0.15 mm wide in lateral view, 0.13 mm wide in ventral

http://rcin.org.pl

view. Siphon (Fig. 368) long, slender and evenly curved semicircularly, its apex as in Fig. 368.

Female genitalia. Genital plates (Fig. 369) fairly wide, only one-fourth of base strongly narrowed. Genital plate 0.75 mm long, 0.18 mm wide. Receptaculum seminis as in Fig. 370.



Figs. 361–370. *Brumus octosignatus* (Gebl.). 361 — outline and pattern of body; 362 — pattern of elytra; 363 — femoral line; 364 — last sternite of male; 365–366 — male genitalia; 367 — siphon; 368 — apex of siphon; 369 — genital plate; 370 — receptaculum seminis.

In external appearance the species is clearly different from others belonging to this genus, but in spot-pattern it strongly resembles *Exochomus kiritschenkoi*.

The species is known from many localities in Mongolia, but it has been collected in single specimens. It lives probably on *Tamarix*.

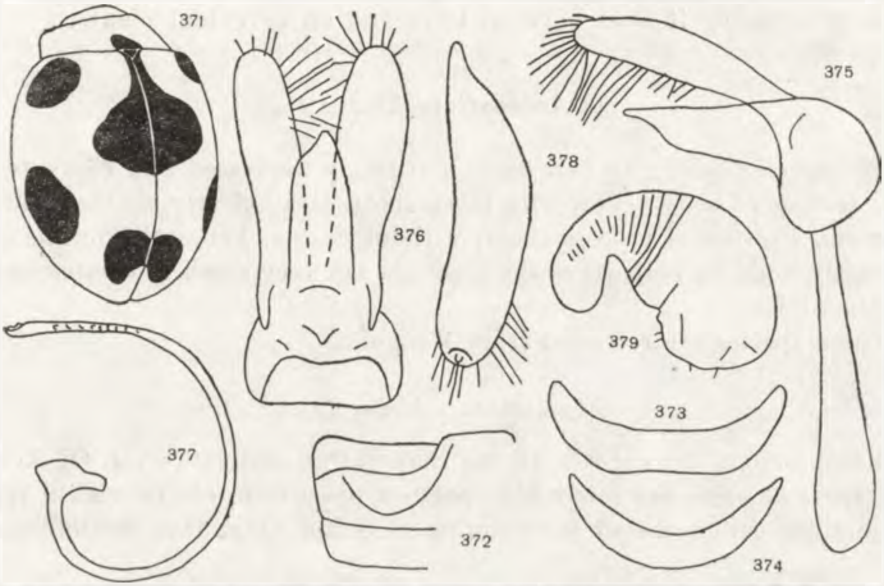
Brumus mongolicus Fleisch.

The species is known from Mongolia and Transbaicalia (Barovsky 1928). From Mongolia recorded recently by Bielawski (1968b).

Body strongly convex, in the form of a very broad oval. Head may be almost entirely black, only clypeus being light. The black colour on head may cover only a half of it or may be limited to its parocular and posterior parts. Pronotum red-rufous with a black spot directly before scutellum. The spot may be of varying size. Scutellum black. Elytra red-rufous with 4 black, large

http://rcin.org.pl

spots on each (Fig. 371). The first spot situated on humeral tubercles and elongated towards anterior margin. The second spot confluent with the opposite one forming a large pear-shaped spot that covers also suture up to anterior margin. The third spot immediately beyond mid-length near suture, the third one, elongate, directly at suture so that at first glance it seems to be confluent with the opposite one. Legs rufous with femora slightly darkened. Underside of body black, only the anterior part of prosternum, sides of segments and the last two segments, light.



Figs. 371–379. *Brumus mongolicus* FLEISCH. 371 – outline and pattern of body; 372 – femoral line; 373 – last sternite of male; 374 – last sternite of female; 375–376 – male genitalia; 377 – siphon; 378 – genital plate; 379 – receptaculum seminis.

Punctures on head small, sparse, very shallow, hardly discernible, areas with distinctly marked reticulate microsculpture. Punctures on pronotum small, very shallow, hardly discernible, areas with distinct reticulate microsculpture. Elytral punctures fairly big, closely arranged, not very distinct due to very strongly developed reticulate microsculpture. Surface of body clearly dull.

Anterior and posterior angles of pronotum rounded, anterior ones feebly produced anteriorly. Lateral margin slightly arcuate. Humeral tubercles on elytra very faintly marked. Lateral reflexions of elytra very narrow. Femoral line (Fig. 372) complete, arch reaching to posterior margin. Last sternite in male (Fig. 373) evenly curved, with posterior margin faintly arcuate. Last sternite in female (Fig. 374) short, quite strongly curved.

Length 2.5–3.5 mm.

Male genitalia as in Figs. 375–376. Length of penis reaching to two-thirds

http://rcin.org.pl

of the length of the parameres, in lateral view it is straight, at apex strongly narrowed and slightly elongate, with an obtuse apex when viewed from below. Penis 0.3 mm long, 0.13 mm wide in lateral view, 0.1 mm wide in ventral view. Siphon (Fig. 377) strongly semicircularly curved, fairly massive.

Female genitalia. Genital plates (Fig. 378) from mid-length narrowing towards base. Genital plate 0.65 mm long, 0.15 mm wide. Receptaculum seminis as in Fig. 379.

The species is easily distinguished from others belonging to this genus by the pattern of spots, and body size.

Most probably it lives both on trees and on perennial plants.

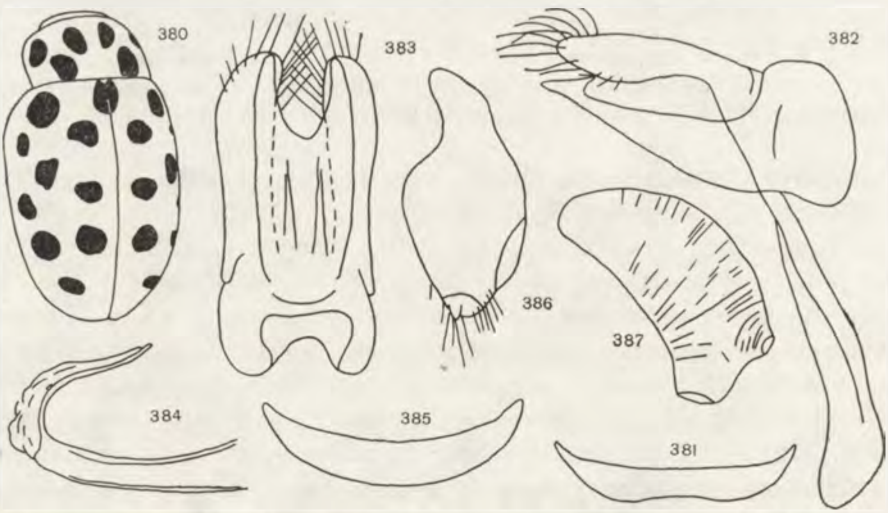
Anisosticta Dejean

The species belonging here have a strongly depressed and elongate body. Upper surface of body yellow with black spots. Head clearly visible from under pronotum. Prosternal process short, without costae. Femoral line incomplete. Legs fairly long. In both sexes the genitalia are very small in comparison with the size of body.

Three species are recorded from Mongolia.

Anisosticta sibirica Biel.

Body moderately convex, in the shape of an elongate oval. On head two black spots at eyes. Six fairly big spots on pronotum, elytra with 9 spots on each and one common spot surrounding scutellum (Fig. 380). Scutellum black.



Figs. 380–387. *Anisosticta sibirica* Biel. 380 – outline and pattern of body; 381 – last sternite of male; 382–383 – male genitalia; 384 – apex of siphon; 385 – last sternite of female; 386 – genital plate; 387 – receptaculum seminis.

http://rcin.org.pl

Some spots on elytra may be interconnected, but this has not been found in Mongolian specimens. Legs yellow-brownish. Underside of body yellow-black.

Punctures on head quite big, closely arranged. Areas with distinct reticulate microsculpture. Punctures on pronotum larger than on head, closely arranged, areas with very faintly marked microsculpture. Elytral punctures very big, close, areas between punctures almost smooth, with irregular small dashes at punctures. Surface of elytra strongly shining.

Anterior and posterior angles of pronotum broadly rounded, posterior ones clearly produced. Lateral margins feebly arcuate. Sides of pronotum reflexed broadly and distinctly. Humeral tubercles faintly marked and situated near humeral angles. Lateral borders of elytra broadly reflexed, reflexion reaching to three-fourth of length of elytra. Arch of femoral line reaching to mid-length of segment. Last sternite in male (Fig. 381) very short, with apices narrow and acute, posterior margin arcuate. Last sternite in female (Fig. 385) with posterior margin evenly arcuate.

Length 3.5–4 mm.

Male genitalia as in Figs. 382–383. Penis as long as parameres, in lateral view with a hooked process at apex, in ventral view strongly notched at apex forming as if a bifurcate end. Penis 0.3 mm long, 0.09 mm wide in lateral view, 0.13 mm wide in ventral view. Siphon short and massive, at apex reflexed backwards (Fig. 384), the reflexed part being short and acute.

Female genitalia. Genital plates (Fig. 386) pear-shaped, with base strongly elongate. Genital plate 0.31 mm long, 0.15 mm wide. Receptaculum seminis (Fig. 387) massive.

In external appearance the species greatly resembles *A. novemdecimpunctata* (L.) – a European species, and *A. kobensis* Lew. – a species with far-eastern distribution. *A. sibirica* differs from them by, among others, a characteristic shape of penis.

It was collected in wet habitats.

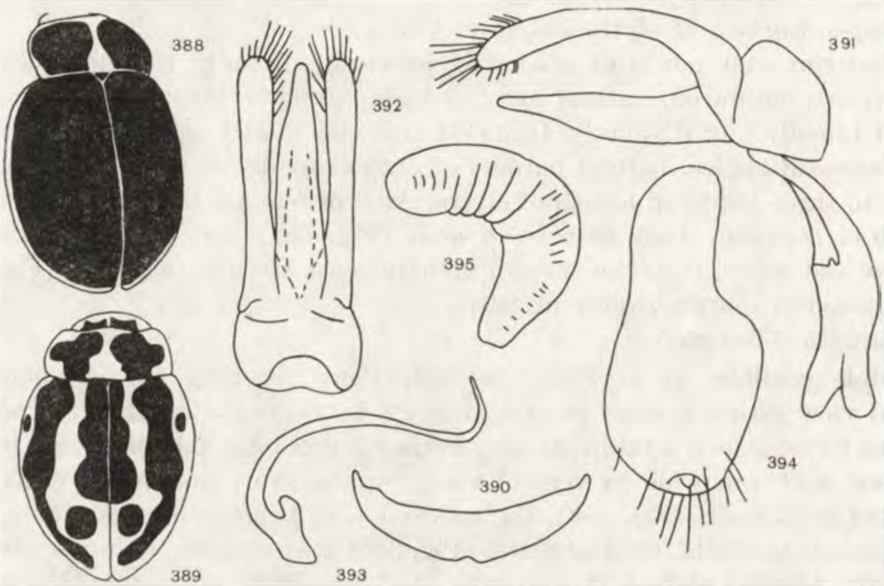
Anisosticta strigata (Thnb.)

The species has definitely northern distribution and its territory extends from northern Europe to Alaska. Only one specimen has been found in Mongolia and even this is of unusual colouration.

Body faintly convex, oblong-oval. Head black with a small yellow spot at middle. Pronotum with two large black spots, their bases reaching to posterior margin of pronotum. Scutellum black. Elytra black (Fig. 388), only lateral borders yellowish. Legs brownish. Lower surface of body black, only metaepimera yellowish. Typically coloured specimens (Fig. 389) have elytra yellowish with three confluent spots at suture in anterior half, in posterior half two spots situated at both sides of suture. At sides an oblong band reaching from base almost to elytra apex. In anterior half, between band and lateral margin a small black spot.

http://rcin.org.pl

Punctures on head of medium size, sparsely arranged, areas with distinct reticulate microsculpture. Punctures and microsculpture on pronotum as on head. Elytral punctures big, closely arranged, areas with distinct microsculpture in the shape of reticule with transverse mesh.



Figs. 388–395. *Anisosticta strigata* (Thbg.). 388–389 – outline and pattern of body; 390 – last sternite of female; 391–392 – male genitalia; 393 – siphon; 394 – genital plate; 395 – receptaculum seminis.

Anterior and posterior angles of pronotum rounded, anterior ones feebly produced anteriorly. Lateral margin evenly arcuate. Sides of pronotum narrowly, but clearly reflexed. Humeral tubercles big, but very faintly marked. Lateral reflexion of elytra wide and reaching almost to apex of elytra. Femoral line not reaching to mid-length of segment. Last sternite in female (Fig. 390) also notched at posterior margin.

Length 3–3.6 mm.

Male genitalia as in Figs. 391–392. Penis almost as long as parameres, in lateral view gradually narrowing from base towards apex, in ventral view obtuse at apex. Penis 0.32 mm long, 0.07 mm wide in lateral view, 0.06 mm wide in ventral view. Siphon (Fig. 393) faintly curved, with apex strongly reflexed.

Female genitalia. Genital plates (Fig. 394) with a wide base. Genital plate 0.27 mm long, 0.14 mm wide. Receptaculum seminis (Fig. 395) with nodulus narrowed.

In external appearance the species resembles certain colourful forms

http://rcin.org.pl

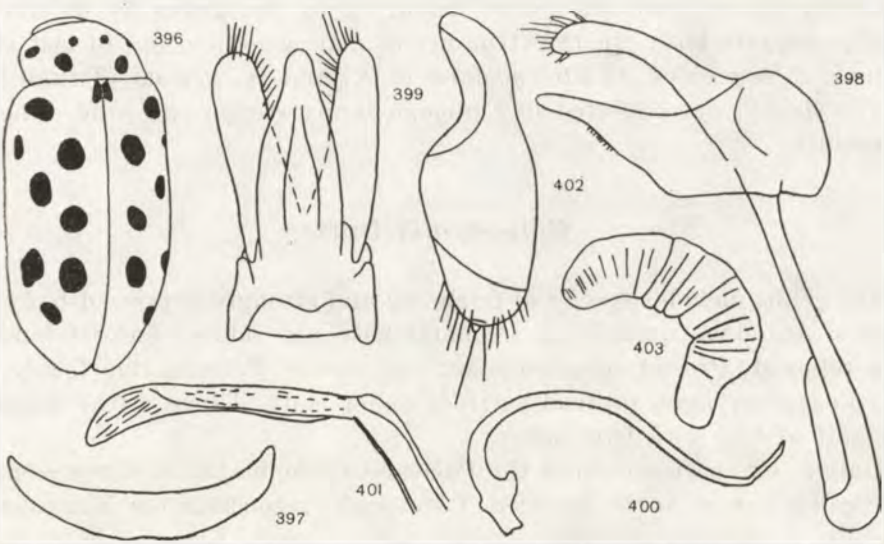
of *A. bitriangularis* (SAY), a species occurring in North America and in Siberia (BIELAWSKI 1958).

The specimens of this species were found in various habitats.

Anisosticta terminassianae BIEL.

The species described from Transbaicakia and China (BIELAWSKI 1959) and recorded from Mongolia (BIELAWSKI 1965, 1975).

Body very strongly elongate with sides almost parallel, faintly convex. Head yellowish with two black, interconnected spots at base. Pronotum with 6 black, almost circular spots, those on the outside smaller than the inner ones. Outside spots may be entirely evanescent. Scutellum black. Elytra with 9 spots on each and one spot at each side of scutellum (Fig. 396). The size of spots varies slightly and there is a tendency to become smaller than bigger, some spots even obliterate altogether. Legs brownish. Underside of body light in most part, only meso- and metasternum and the middle of the first abdominal segment partly dark.



Figs. 396–403. *Anisosticta terminassianae* BIEL. 396 – outline and pattern of body; 397 – last sternite of female; 398–399 – male genitalia; 400 – siphon; 401 – apex of siphon; 402 – genital plate; 403 – receptaculum seminis.

Punctures on head small, quite closely arranged, areas with distinct microsculpture in the shape of reticule with irregular mesh. Punctures on pronotum of similar size as those on head, arranged fairly sparsely. Areas between punctures strongly shining with irregular dashes chaotically arranged. Punctures on elytra quite big and closely arranged, areas strongly shining with few, hardly discernible dashes arranged somewhat radially at elytral borders.

http://rcin.org.pl

Anterior angles of pronotum broadly rounded, posterior ones faintly rounded. Lateral margins evenly arcuate. Sides of pronotum quite broadly and distinctly reflexed. Humeral tubercles large, but faintly marked. Lateral reflexion of elytra very narrow and reaching almost to apex of elytrae. Arch of femoral line reaching to mid-length of segment. Last sternite in male with poterior margin arcuate. Last sternite in female (Fig. 397) slightly notched at mid-width of posterior margin.

Length 3.7–4.8 mm.

Male genitalia as in Figs. 398–399. Penis as long as parameres, in lateral view from base to one-third of length very wide, then narrowing rapidly and curving slightly. Penis 0.32 mm long, 0.12 mm wide in lateral view, 0.12 mm wide in ventral view. Siphon (Fig. 400) slightly curved with a reflexed apex which is elongate and wide (Fig. 401).

Female genitalia. Genital plates (Fig. 402) pear-shaped and rather elongate. Genital plate 0.35 mm long, 0.14 mm wide. Receptaculum seminis (Fig. 403) with a small nodulus.

In external appearance the species is most similar to *K. kobensis* Lew., but clearly differs from all species belonging to this genus by its unusually strongly elongate body. In the structure of male genitalia and of last sternite in female it resembles *A. bitriangularis* (Say) and *A. strigata* (Thnbg.).

The species was collected in *Caragana* sandy steppe and sand-dunes with *Lasiagrostis*.

Hippodamia Dejean

The genus includes species of fairly big and strongly depressed body. Body elongate. Antennae quite long. Pronotal base not ridged. Lateral borders of elytra reflexed. Prosternal process without costae. Femoral line feebly developed. Legs very long, protruding from under body. Tibiae of the second and third pair of legs with two spikes.

Only a few species occur in the Palaearctic, the majority of representatives of the genus live in North America. Two species recorded from Mongolia.

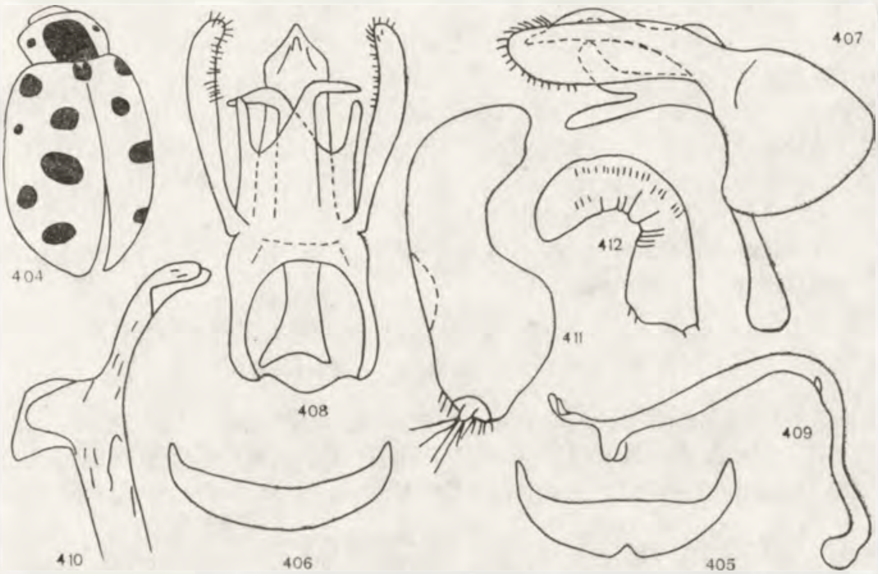
Hippodamia tredecimpunctata (L.)

The species is widely distributed in Europe through Asia to North America. Forms in North America and Far Eastern Asia belong to separate subspecies. The form occurring in Mongolia is the same as that in Europe.

Body faintly convex, in the shape of an elongate oval. Head yellowish, only base and area at eyes, black. The light colour between eyes forms as if a triangle with acute angle directed towards back. Pronotum yellowish with one large, black spot on disc, the spot with the whole base are contiguous to posterior margin and not reaching to anterior margin. At both sides of the spot

http://rcin.org.pl

there are small, black, circular spots situated at mid-length of pronotum. Scutellum black. Elytra reddish or yellow-reddish with 6 spots of various sizes on each and one common spot on scutellum (Fig. 404). Mongolian individuals do not demonstrate any greater variability in elytral pattern. Femora black, tibiae and tarsi light. Underside of body black, only sides of abdominal segments light.



Figs. 404–412. *Hippodamia tredecimpunctata* (L.). 404 – outline and pattern of body; 405 – last sternite of male; 406 – last sternite of female; 407–408 – male genitalia; 409 – siphon; 410 – apex of siphon; 411 – genital plate; 412 – receptaculum seminis.

Punctures on head fairly big, closely arranged, areas with distinct microsculpture in the shape of reticule with transverse mesh. Punctures on pronotum of similar size as those on head, arranged more sparsely, areas shining with traces of microsculpture. Elytral punctures large, deep and arranged very densely, areas with traces of microsculpture in the form of irregular dashes. Surface of elytra shining.

Anterior margin of elytra almost straight. Anterior and posterior angles broadly rounded, not produced. Lateral margin of pronotum evenly, but faintly arcuate so that the greatest width is at mid-length. Sides of pronotum distinctly and broadly reflexed. Humeral tubercles large and quite distinct, situated in humeral angles. Lateral reflexion of elytra fairly wide and reaching almost to the apex of elytra. Femoral line practically absent. Last sternite in male (Fig. 405) with apices long and acute, posterior margin strongly notched triangularly. Last sternite in female (Fig. 406) evenly curved, with apices short and acute.

http://rcin.org.pl

Length 5–7 mm.

Male genitalia as in Figs. 407–408. Penis slightly shorter than parameres, at apex slightly reflexed, with two bifurcate lobes forming long processes directed towards front and sideways. In particular specimens the sideway reflexion of processes varies and is more or less strong. Penis 0.8 mm long, 0.35 mm wide in lateral view, 0.46 mm wide in ventral view. Siphon (Fig. 409) of irregular shape, curving almost at right angle. Apex of siphon as in Fig. 410.

Female genitalia. Genital plates (Fig. 411) strongly notched at mid-length, with sexual calli big. Genital plate 0.64 mm long, 0.25 mm wide. Receptaculum seminis (Fig. 412) of lunulate shape, with nodulus short and slightly widened.

The species is similar to *H. septemmaculata* (Deg.), but it is clearly distinguished by the shape of pronotum and elytra. It also differ in pattern of pronotum and elytra. In *H. septemmaculata* scutellar and subscutellar spots are interconnected into one elongate spot.

H. tredecimpunctata was collected into Malaise traps and at wet places on various grasses and on reeds.

Hippodamia septemmaculata (Deg.)

The territory of this species is more restricted than that of the previous species. It extends from Central and North Europe, throughout Siberia to Mongolia. Most probably in Mongolia lies the south-eastern border of its distribution.

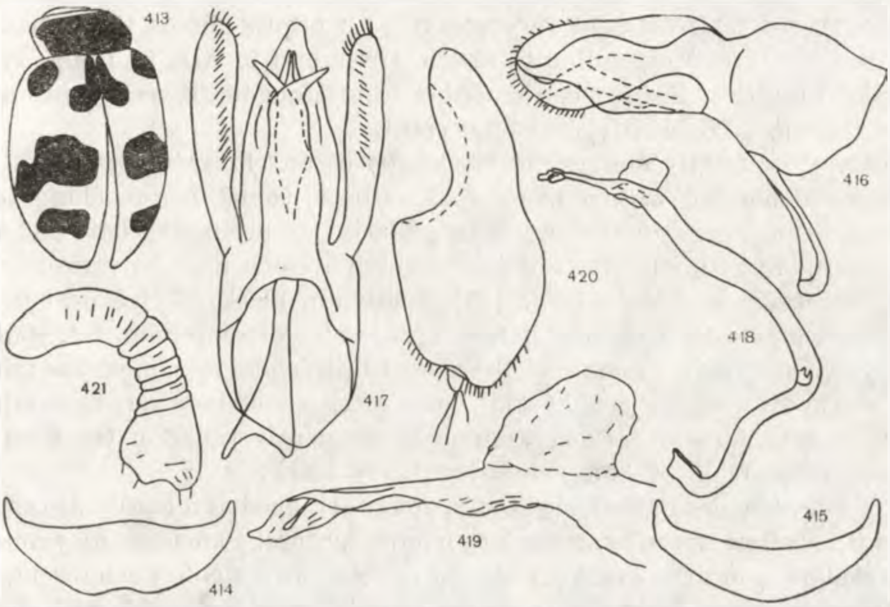
Body moderately convex, in the shape of a fairly wide oval. Head black with a small, oval, yellowish spot situated in the front at middle. Pronotum black with lateral margins and anterior one yellowish. Elytra reddish-brownish or reddish with black spots: 6 spots on each elytron and one common spot on scutellum (Fig. 413). Some of these spots are always interconnected. Scutellar and subscutellar spots are interconnected and so do two spots situated immediately beyond mid-length. Humeral spot always large, subhumeral one very small. In specimens from Mongolia there occurs no greater variability in elytral pattern. Legs black. Underside of body black, only sides of abdominal segments light.

Punctures on head large, deep and closely arranged, areas with faintly expressed microsculpture. Pronotal punctures large, deep and closely arranged, areas with distinct though shallow reticulate microsculpture. Punctures on elytra of similar size as those on pronotum, but shallower and arranged more sparsely, microsculpture very distinct and therefore the elytra are dull.

Anterior margin of pronotum distinctly reflexed anteriorly at mid-width. Anterior and posterior angles rounded, but anterior ones rounded less and slightly produced anteriorly. Lateral margins of pronotum arcuate unevenly so that the greatest width is slightly before mid-length. Sides of pronotum reflexed very feebly and indistinctly. Humeral tubercles large and situated in hu-

http://rcin.org.pl

meral angles. Lateral reflexion of elytra very narrow but reaching to apex of elytra. Femoral line reduced entirely. Last sternite in male (Fig. 414) very long, apices narrow, posterior margin slightly arcuate. Last sternite in female (Fig. 415) short, with posterior margin strongly arcuate and apices narrow and long.



Figs. 413–421. *Hippodamia septemmaculata* (DEG.). 413 – outline and pattern of body; 414 – last sternite of male; 415 – last sternite of female; 416–417 – male genitalia; 418 – siphon; 419 – apex of siphon; 420 – genital plate; 421 – receptaculum seminis.

Length 5.5–8 mm.

Male genitalia as in Figs. 416–417. Penis as long as parameres, curved at apex, processes short. Penis 1.0 mm long, 0.45 mm wide in lateral view, 0.5 mm wide in ventral view. Siphon (Fig. 418) curved unevenly and bent almost at right angle. Apex of siphon as in Fig. 419.

Female genitalia. Genital plates (Fig. 420) pear-shaped, base straight, sexual calli big. Genital plate 0.73 mm long, 0.32 mm wide. Receptaculum seminis (Fig. 421) with numerous distinct striae.

The species was collected on wet meadows with *Lasiagrostis* and *Carex* and in mountain steppes at borders of coniferous and birch forests.

Adonia MULS.

The species included here are of medium size, with body elongate and depressed. Pronotum not touching the elytral base throughout its width.

http://rcin.org.pl

Additional tooth at claws slender, at end acute. Elytra widest at mid-length. Femoral line markedly developed.

The genus includes only a few species, two of which occur in Mongolia.

Adonia variegata (Goeze)

The species is distributed very widely — it occurs almost throughout the Palaearctic, in Africa extending to South Africa and in Asia to India. It does not occur in Japan. It has been recorded from Mongolia several times and is one of the most frequently found ladybird.

Body very faintly convex, in the shape of an elongate oval (Fig. 439). Head cream-coloured with a black spot at base, sometimes reaching to the middle of head. Pronotum creamy with a black spot occupying base and widening towards front in the form of four processes which may be variously confluent in certain specimens (Fig. 435). Scutellum black. Elytra orange with black spots and with a creamy lightening at sides of scutellum. Six spots on each elytron and one common sculellar spot. In particular specimens the number and size of spots varies (Figs. 422–433). Quite often, some spots may be confluent. Legs light with femora darkened or black, frequently tibiae of the hind pair darkened. Underside of body almost entirely black.

Punctures on head small, shallow, sparsely arranged and hardly discernible, areas with shallow irregular, reticulate microsculpture. Punctures on pronotum small, shallow and arranged very sparsely, areas with shallow microsculpture. Punctures on elytra quite big, deep and closely arranged, areas with distinct microsculpture in the shape of partly interconnected irregular dashes.

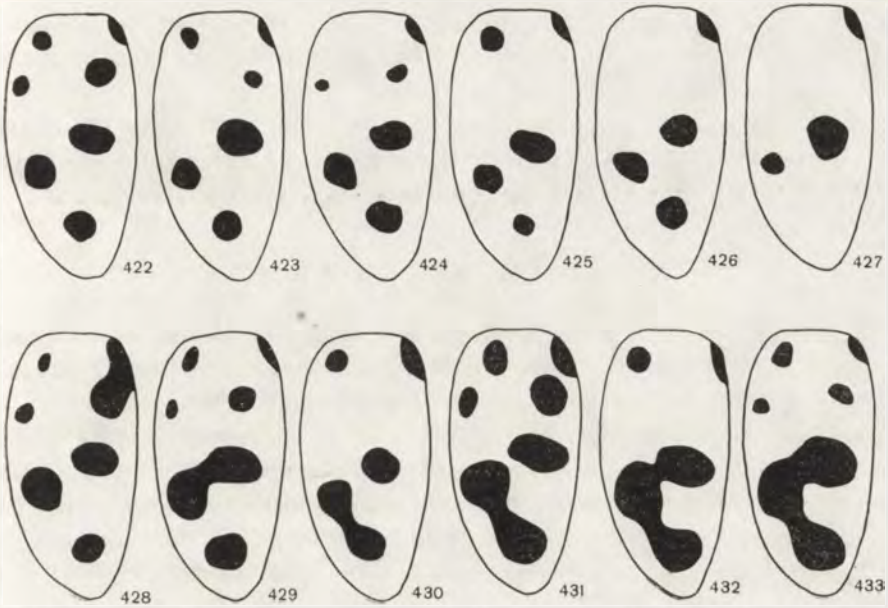
Anterior margin of pronotum slightly reflexed anteriorly. Anterior angles faintly rounded, slightly produced anteriorly. Posterior angles broadly rounded. Lateral margin arcuate unevenly so that the greatest width occurs immediately beyond mid-length. Lateral reflexion of pronotum distinct and wide. Lateral reflexion of elytra narrow yet distinct. Humeral tubercles large, but not produced, at the same distance from lateral and anterior margins. Femoral line (Fig. 436) almost reaching to anterior angles of the first abdominal segment, arch reaching to mid-length. Last sternite in male (Fig. 437) with apices narrow and short, posterior margin arcuate quite strongly. Last sternite in female (Fig. 438) very feebly sclerotized at mid-width.

Length 3–5.5 mm.

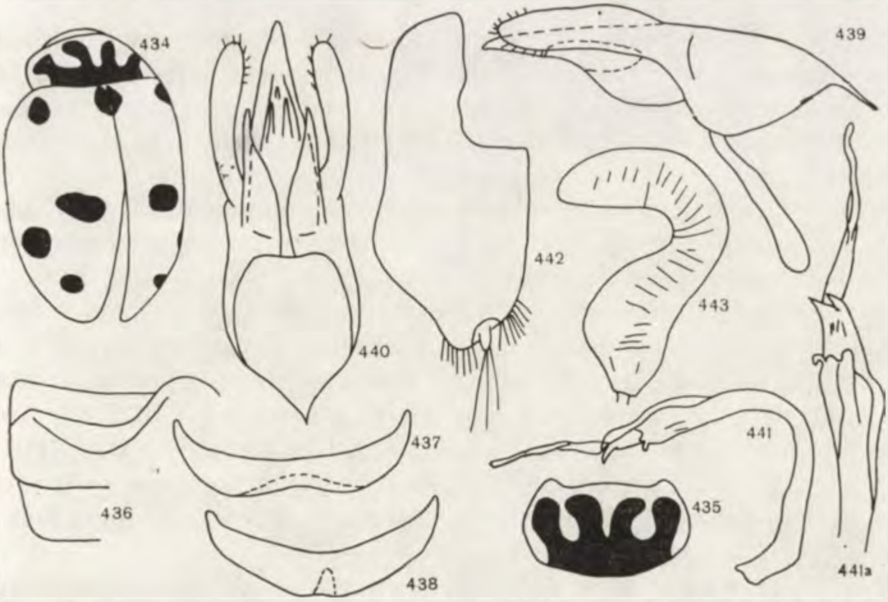
Male genitalia as in Figs. 439–440. Penis longer than parameres, in lateral view with apex narrow and acute. Penis 0.66 mm long, 0.26 mm wide in lateral view, 0.25 mm wide in ventral view. Siphon (Fig. 441) massive, with numerous processes before apex, apex strongly elongate (Fig. 441a).

Female genitalia. Genital plates (Fig. 442) from inside before base strongly notched, of irregular shape. Genital plate 0.46 mm long, 0.21 mm wide. Receptaculum seminis (Fig. 443) strongly curved, with nodulus small.

http://rcin.org.pl



Figs. 422-433. *Adonia variegata* (GOEZE). Variability of the pattern of elytra.



Figs. 434–443. *Adonia variegata* (GOEZE). 434 – outline and pattern of body; 435 – pronotum; 436 – femoral line; 437 – last sternite of male; 438 – last sternite of female; 439–440 – male genitalia; 441 – siphon; 441a – apex of siphon; 442 – genital plate; 443 – receptaculum seminis.

http://rcin.org.pl

There are no essential differences between Mongolian specimens and European ones, but within the variability of elytral pattern there is a greater tendency towards the presence of all spots.

In Mongolia *A. variegata* was recorded in various habitats of the character of a steppe. It also occurs very frequently in ruderal habitats and in cultivated fields. It inhabits both wet and dry habitats.

Adonia amoena (FALD.)

The territory of the species is fairly restricted. In the west it extends to Kazakhstan, then through Siberia and Mongolia towards the east, but it does not reach to Korea. It has been recorded from Mongolia many times.

Body moderately convex, in the form of a wide oval (Fig. 453). Head yellowish with base black and with two small black spots on clypeus, in particular individuals the spots are of different size. Pronotum yellowish with a large black spot occurring on pronotal base, at front the spot slightly emarginate and before scutellum forming a background for a small yellowish spot (Fig. 454). Elytra yellowish with black spots interconnected in various ways and forming a characteristic pattern (Figs. 444–452). Frequently the spots are so diffused and interconnected that elytra are black with yellowish spots. Legs black, only tibiae of the first pair light. Underside of body almost black, sides of abdominal segments light.

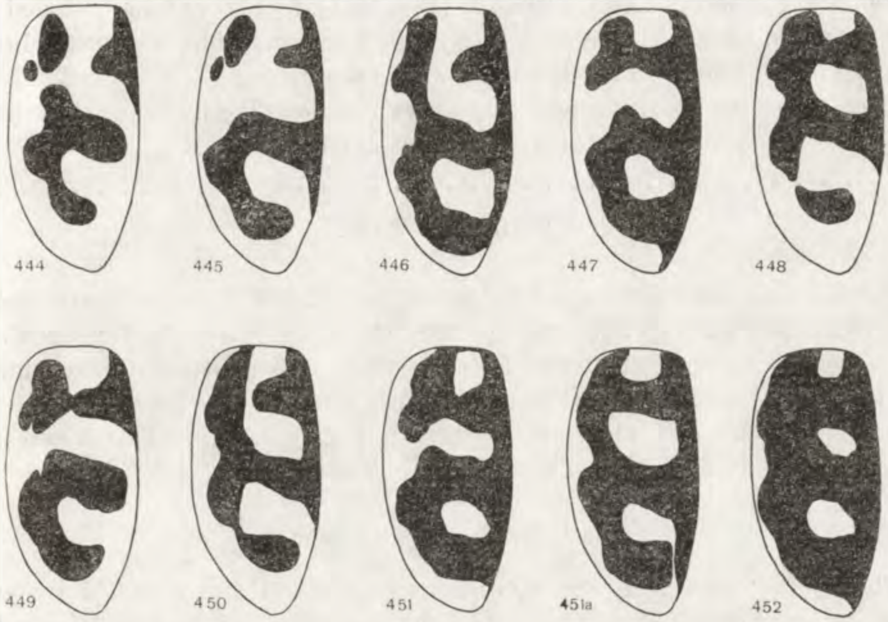
Punctures on head small, but deep and closely arranged yet towards front they are shallower and shallower and arranged more sparsely, areas at the back of head with distinct microsculpture which becomes evanescent towards front. Punctures on pronotum of similar size as those on head, but arranged more sparsely, areas with distinct reticulate microsculpture. Punctures on elytra only slightly bigger than those on pronotum, deep and arranged fairly closely, areas between them with quite distinct microsculpture in the form of reticule with broken mesh.

Anterior margin of pronotum almost straight. Anterior angles rounded and slightly produced anteriorly. Lateral margins arcuate evenly so that the greatest width is at mid-length. Humeral tubercles big, not produced, situated near lateral margin. Lateral reflexion of elytra narrow yet distinct. Arch of femoral line reaching to mid-length of segment. Last sternite in male (Fig. 455) very short, with apices narrow and very long, posterior margin slightly arcuate. Last sternite in female (Fig. 456) short, with apices narrow and quite long.

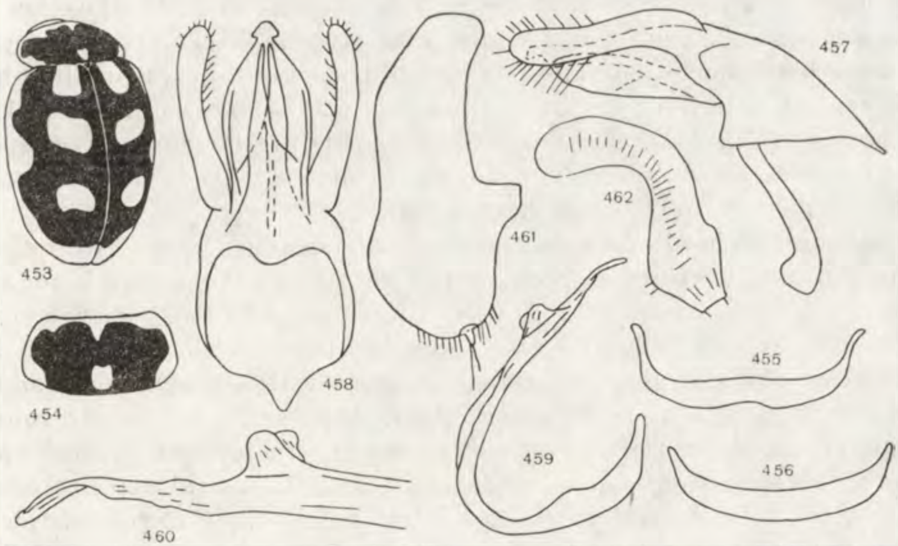
Length 4–5.5 mm.

Male genitalia as in Figs. 457–458. Penis almost as long as parameres, in ventral view narrowed before apex and apex slightly widened. Penis 0.58 mm long, 0.23 mm wide in lateral view, 0.28 mm wide in ventral view. Siphon (Fig. 459) at one-third from base strongly curved, massive, with two lobes before apex from inner side (Fig. 460).

http://rcin.org.pl



Figs. 444–452. *Adonia amoena* (Fald.). Variability of the pattern of elytra.



Figs. 453–462. *Adonia amoena* (Fald.). 453 – outline and pattern of body; 454 – pronotum; 455 – last sternite of male; 456 – last sternite of female; 457–458 – male genitalia; 459 – siphon; 460 – apex of siphon; 461 – genital plate; 462 – receptaculum seminis.

http://rcin.org.pl

Female genitalia. Genital plates (Fig. 461) feebly notched, basal part long and wide. Genital plate 0.56 mm long, 0.28 mm wide. Receptaculum seminis (Fig. 462) faintly curved, with a wide nodulus.

The species occurs in various steppe- or meadow-like habitats, but mainly in wet ones. It occurs in great numbers on nettles.

Semiadalia Cr.

Beetles that belong here are quite big, but of fairly varied shape and different convexity of body. Most frequently the body is a little depressed. Pronotum deeply notched at front. Lateral ridge of pronotum not reaching to lateral margin. Body widest in posterior part, immediately beyond mid-length. The genus includes several species occurring mainly in Central Asia and in the Caucasus. Only one species is known from Mongolia.

Semiadalia notata (Laich.)

The species occurs in the mountains of Central and South Europe and on the Balkan Peninsula, in Greece, on the Caucasus and in Asia Minor. From Mongolia recorded only once by Munster (1923). It has not been reported in more recent papers. Its occurrence must be confirmed.

Body strongly depressed, in the form of a broad oval. Head yellow with its base black and, mainly in females, with clypeus black. Pronotum yellow with a big black spot whose anterior margin is curved S-like. Scutellum black. Elytra reddish with 5 black spots on each and with a large common black spot on scutellum (Fig. 463). Occasionally some spots are interconnected, spots 3 and 4 interconnected quite often. Underside of body black, only epimera of meso- and metasternum white. Legs black.

Punctures on head of medium size, sparsely arranged, areas with reticulate microsculpture. Punctures on pronotum of similar size as those on head, arranged quite closely, areas with faintly discernible reticulate microsculpture. Elytra dull. Elytral punctures large, closely arranged, there occurs a small difference in the size of particular spots, areas with distinct microsculpture.

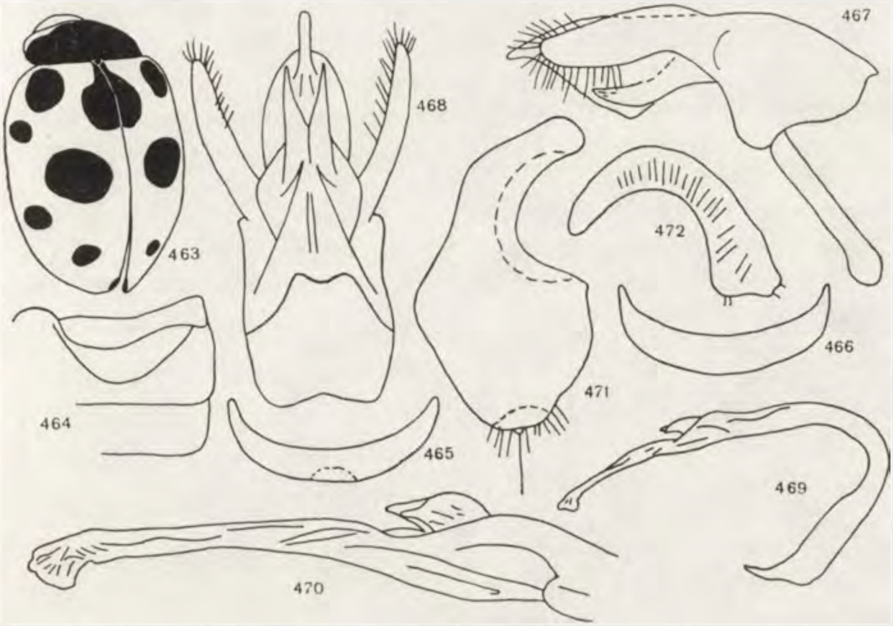
Anterior margin of pronotum straight. Anterior angles faintly rounded, strongly produced anteriorly. Posterior margins in the form of an obtuse angle. Pronotal surface near posterior angles as if dished. Lateral margins arcuate. Humeral tubercles faintly marked. Lateral reflexion of elytra narrow and running to elytral apex. Femoral line complete (Fig. 464), arch reaching slightly beyond mid-length of segment. Last sternite in male (Fig. 465) short, with anterior margin arcuate, middle of sternite feebly sclerotized near posterior margin. Last sternite in female (Fig. 466) short, with apices narrow.

Length 4.5–5.5 mm.

Male genitalia as in Figs. 467–468. Penis longer than parameres, in lateral

http://rcin.org.pl

view very wide and with upper margin protruding over parameres, in ventral view as if consisting of 3 parts, three acutely ended lobes occur here additionally. Penis 0.7 mm long, 0.35 mm wide in lateral view, 0.33 mm wide in ventral view. Siphon (Fig. 469) as if bent, with a narrow and long siphonal sack and with two small lobate processes at one-third from apex. Siphonal apex strongly elongate (Fig. 470).



Figs. 463–472. *Semiadalia notata* (LAICH.). 463 — outline and pattern of body; 464 — femoral line; 465 — last sternite of male; 466 — last sternite of female; 467–468 — male genitalia; 469 — siphon; 470 — apex of siphon; 471 — genital plate; 472 — receptaculum seminis.

Female genitalia. Genital plates (Fig. 471) strongly notched so that base is narrow and long. Sexual calli very small. Genital plate 0.7 mm long, 0.4 mm wide. Receptaculum seminis (Fig. 472) curved lunulately, slender, with nodulus faintly distinct.

In external appearance the species resembles *Hippodamia tredecimpunctata*.

Spiladelpha SEM. et DOBZH.

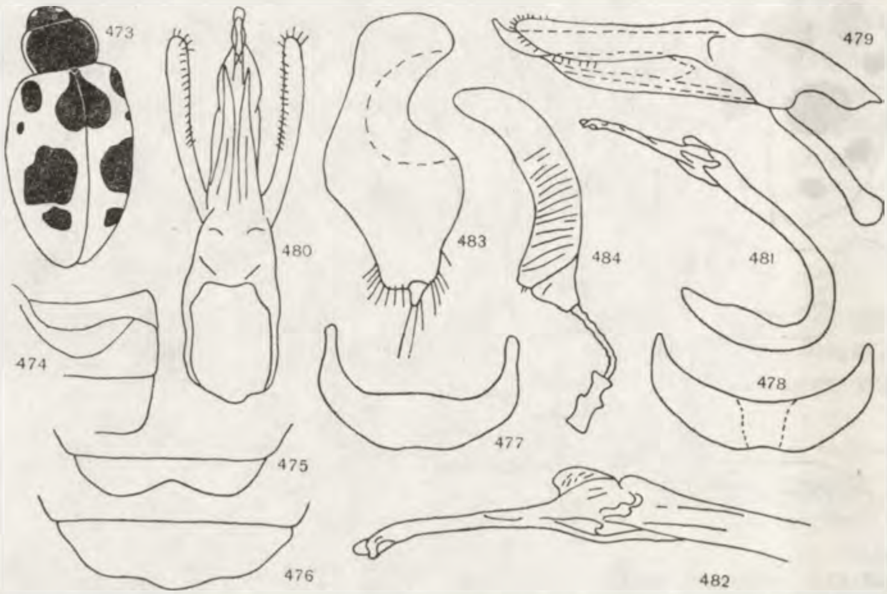
The genus includes fairly big species with body strongly depressd. Antennae long, 11-jointed. Antennal club 3-jointed. Third antennal joint strongly widened towards side. Terminal segment of maxillar palps triangular, but strongly elongate at the same time. Legs long. Mesosternum not notched at front.

Of the two species that belong to this genus one occurs in Mongolia.

http://rcin.org.pl

Spiladelpha barovskii Sem. et Dobzh.

Body strongly elongate, with sides almost parallel, very faintly convex. Head black, only at front light spots near eyes. Pronotum black with lateral margins yellowish. Scutellum black. Elytra orange-yellowish with black spots (Fig. 473). Below scutellum a large black spot common to both elytra. Two spots situated in posterior half may be interconnected. Legs black, only tarsi and the inner side of tibiae of the first pair, light. Underside black.



Figs. 473–484. *Spiladelpha barovskii* (Sem. et Dobzh.). 473 — outline and pattern of body; 474 — femoral line; 475 — fifth sternite of the male abdomen; 476 — fifth sternite of the female abdomen; 477 — last sternite of male; 478 — last sternite of female; 479–480 — male genitalia; 481 — siphon; 482 — apex of siphon; 483 — genital plate; 484 — receptaculum seminis.

Punctures on head and pronotum fairly big, deep and arranged not very closely, areas between them with strongly expressed, reticulate microsculpture. Punctures on elytra slightly bigger than on head and pronotum, closely arranged, areas with shallow microsculpture in the form of reticule.

Anterior margin of pronotum slightly reflexed anteriorly. Anterior and posterior angles broadly rounded, anterior ones a little produced anteriorly. Lateral margins of pronotum evenly arcuate. Posterior margin concave before angles. Sides of pronotum narrowly reflexed. Humeral tubercles big, but not protruding and situated near lateral margin. Lateral reflexion of elytra narrow, yet distinct. Apices of elytra clearly pointed. Femoral line (Fig. 474) complete, arch reaching slightly to beyond mid-length of segment. Fifth sternite in male

http://rcin.org.pl

(Fig. 475) strongly notched, fifth sternite in female (Fig. 476) curved at mid-width. Last sternite in male (Fig. 477) long, with long apices, posterior margin notched a little. Last sternite in female (Fig. 478) long, posterior margin notched and the middle of sternite very faintly sclerotized.

Length 5–5.8 mm.

Male genitalia as in Figs. 479–480. Penis longer than parameres, at apex reflexed into a short point, when viewed from below narrow, with big elongate lobes, apex widened twice. Penis 1.2 mm long, 0.3 mm wide in lateral view, 0.15 m wide in ventral view. Siphon (Fig. 481) massive, at one-third from base strongly reflexed, at one-third from apex clearly divided. Apex of siphon as in Fig. 482.

Female genitalia. Genital plates (Fig. 483) arranged a little obliquely. Genital plate slightly curved S-like, with sexual callus big. Genital plate 0.55 mm long, 0.25 mm wide. Receptaculum seminis (Fig. 484) feebly curved, with a very small nodulus. Infundibulum very short.

Collected in a mountain steppe, some individuals under stones, collected at night when lamps were used.

Aages Bar.

The genus includes only one species with a very characteristic pattern on elytra. Body short-oval, faintly convex. Pronotum moderately notched at front, at back wider than at front, posterior angles ridged. Femoral line developed. Second and third tibiae with two spurs. Claws with a pointed tooth at middle.

Aages prior Bar.

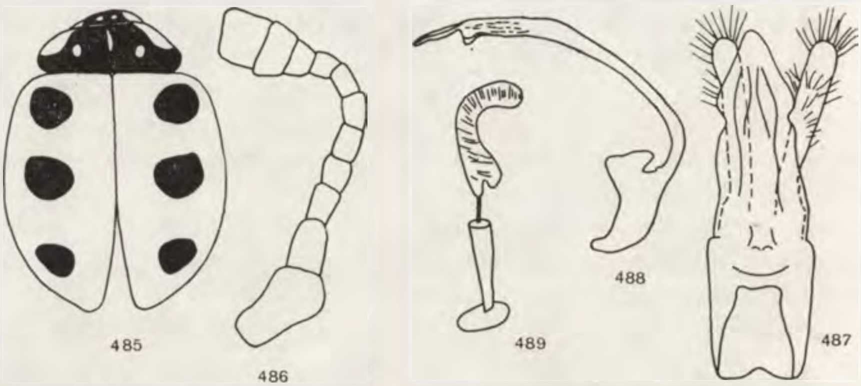
Species known from "Burchan-Budda" and from "Mongolia merid.". The type examined comes from: "Alasanskije gory, 20. VI. 1873, Przewalskij". Since the time it was described no specimens of the species have been collected. The redescription given below is based on the type-specimen preserved in the Institute of Zoology, Academy of Sciences U.S.S.R. in Leningrad and the figures of genitalia are given after Dobzhansky (1926).

Head black with two whitish spots. Pronotum black with anterior angles, two oval spots at sides and an oblong spot at middle, whitish. Scutellum black. Elytra cream-coloured, each with three large black spots arranged in a row (Fig. 485). Lateral margins and suture of elytra very narrowly black. Underside of body black, only meso- and metasternal epimera and the posterior half of metasternal episternum whitish. Legs black.

Puncturation of head consists of two kinds of punctures – big and small punctures, but the difference in size between them is inconsiderable. Interwals between small punctures less than their diameter. Big punctures arranged

http://rcin.org.pl

chaotically. Areas with distinct reticulate microsculpture. Pronotal punctures of medium size, arranged fairly sparsely. Areas smooth. Elytral puncturation consists of punctures of various sizes. There are bigger and slightly smaller punctures, but there are intermediate ones as well, so it is difficult to speak about double puncturation. Punctures arranged very closely.



Figs. 485–489. *Aages prior* Bar. 485 – outline and pattern of body; 486 – antenna; 487 – male genitalia, ventral view; 488 – siphon; 489 – receptaculum seminis.

Head with separate fairly long hair. Antennae (Fig. 486) massive, with a short antennal club. Antennal joints 3–6 of almost the same length, only joint 4 a little shorter. Base of pronotum not ridged. On sides of pronotum at base there are irregular dishes. Lateral margin of elytra narrowly ridged from humeral angle to apex. Wings developed strongly and well. On prosternal process costae are absent.

Length 5.8 mm.

Penis as long as paramere, when viewed from below (Fig. 487) it resembles the point of a dart. Parameres strongly pubescent. Siphon (Fig. 488) with a big siphonal sack, apex narrow, elongate. Receptaculum seminis (Fig. 489) with a very small nodulus, cornu curved, with numerous striae.

Nothing is known about the bionomics of the species.

Tytthaspis Crotch

The majority of the species belonging here have a small body. Antennae short. Tarsal claws with an additional tooth at base. Prosternum with costae. Femoral line incomplete.

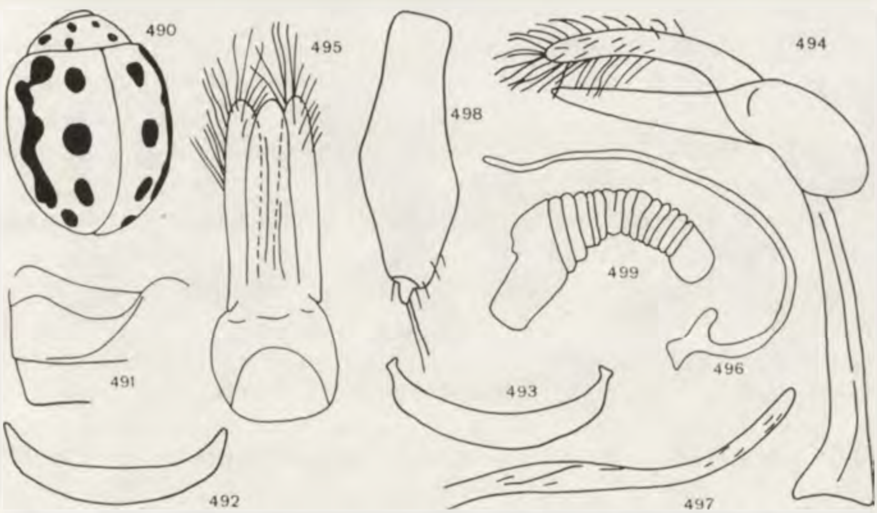
In Mongolia there are two species and one of them, *T. trilineata*, has an exceptionally big body.

http://rcin.org.pl

Tytthaspis lateralis FLEISCH.

The species was described from Mongolia as a variety of *T. sedecimpunctata* (L.) and up till now specimens from Mongolia were recorded under that name. However, more detailed studies on Mongolian populations, and particulatry an examination of male genitalia have revealed that this is a separate species, not a variety.

Body strongly convex, of an almost circular shape. Head yellowish. Pronotum yellowish with 6 almost circular spots. Scutellum black. Elytra yellowish with a black pattern and black spots (Fig. 490). Elytral suture black and this colouration slightly widens below scutellum. On each elytron at outer margin there is an oblong band extending from humeral tubercle to four-fifths of elytra, with a small black spot between the end of the band and apex of elytra. Moreover, three small spots are situated along suture. Legs light, only the middle of the lower surface strongly darkened.



Figs. 490–499. *Tytthaspis lateralis* FLEICH. 490 — outline and pattern of body; 491 — femoral line; 492 — last sternite of male; 493 — last sternite of female; 494–495 — male genitalia; 496 — siphon; 497 — apex of siphon; 498 — genital plate; 499 — receptaculum seminis.

Punctures on head small, shallow and sparsely arranged, areas with shallow reticulate microsculpture. Punctures on pronotum a little bigger than on head, shallow, but arranged more sparsely, areas with indistinct microsculpture. Elytral punctures quite big, shallow, sparsely arranged, areas strongly shining, with a few very small punctures and scratches.

Anterior margin of pronotum straight. Angles feebly rounded, slightly produced anteriorly. Posterior angles broadly rounded, hidden a little under anterior border of elytra. Lateral margins of pronotum faintly arcuate, ridged. Pronotal sides slightly reflexed, but very narrowly, practically of double breadth

http://rcin.org.pl

of ridge. Lateral borders of elytra reflexed very feebly, restricted only to the width of the ridge that reaches to elytral apex. Arch of femoral line (Fig. 491) reaching almost to posterior margin and running, over a short distance, parallel to it towards lateral margin. Last sternite in male (Fig. 492) short, apices narrow, posterior margin truncate straight at mid-width. Last sternite in female (Fig. 493) short, with apices truncate and posterior margin evenly arcuate.

Length 2.3–2.8 mm.

Male genitalia as in Figs. 494–495. Penis as long as parameres, in lateral view almost straight, in ventral view narrow, with margins parallel and apex evenly rounded. Penis 0.28 mm long, 0.05 mm wide in lateral view, 0.06 mm wide in ventral view. Siphon (Fig. 496) slender, semicircularly curved in basal part. Apex of siphon a little reflexed (Fig. 497).

Female genitalia. Genital plates (Fig. 498) narrow, elongate, at one-third from apex slightly widened, base wide, sexual calli big. Genital plate 0.29 mm long, 0.1 mm wide. Receptaculum seminis (Fig. 499) with nodulus elongate and cornu with numerous rings.

In external appearance the species is very similar to *T. sedecimpunctata* (L.) yet differs from it by the lateral band connected with humeral spot, by smaller size of body, lighter ground and by the fact that spots are considerably smaller. In *T. lateralis* penis is considerably narrower than in *T. sedecimpunctata* and apex of siphon is only slightly reflexed.

The species lives on ground in various steppe habitats, particularly in habitats with poor vegetation.

Tytthaspis trilineata Ws.

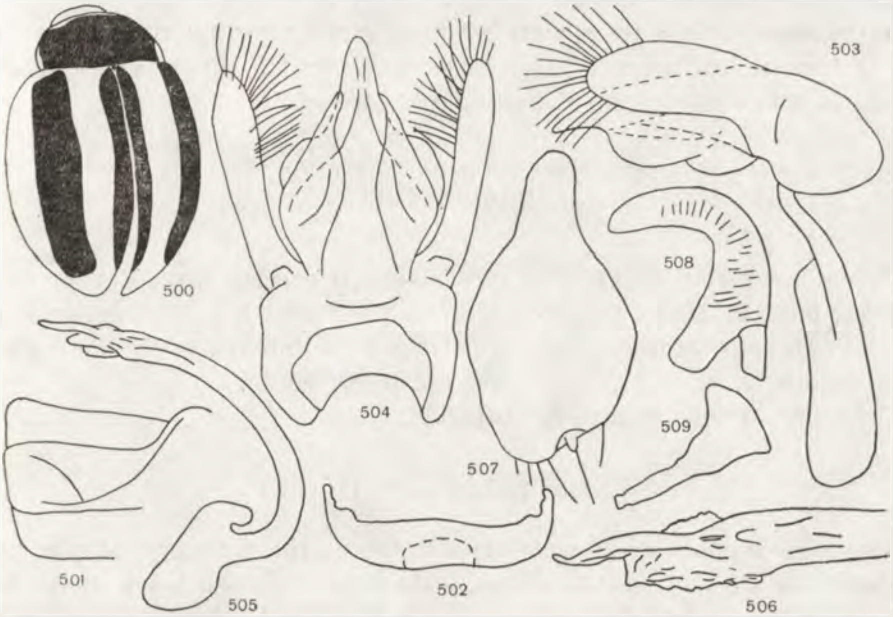
The species is distributed from Mongolia to Tibet.

Body quite strongly convex, in the form of an unevenly elongate oval, the greatest width of body in posterior half. Head with the anterior half yellowish, posterior one black in male, all black with two yellow spots on anterior half in female. Pronotum black with lateral margins and anterior one, yellowish. Scutellum black. Elytra yellowish with a black suture and a black band running through the middle of each elytron (Fig. 500). The band begins on anterior margin and reaches almost to elytral apex. Interval between the end of the band and elytral apex equal to the distance from lateral margin and is twice that from suture. Legs black. Underside of body black, only meso- and metasternal epimera whitish.

Punctures on head fairly big, but there is a small difference in the size of particular punctures. They are arranged closely, areas between them with microsculpture not very distinct, irregular. Punctures on pronotum slightly smaller than on head, closely arranged, areas with very shallow, irregular microsculpture. Elytral punctures big and arranged very closely, areas shining, with traces of small scratches.

http://rcin.org.pl

Anterior margin of pronotum straight. Anterior angles faintly rounded, produced anteriorly. Posterior angles broadly rounded, slightly produced. Lateral margins evenly arcuate. Sides of pronotum distinctly, but narrowly reflexed. Humeral tubercles on elytra big, very feebly expressed and situated close to anterior margin. Lateral reflexion of elytra very narrow yet distinct,



Figs. 500–509. — *Tytthaspis trilineata* Ws. 500 — outline and pattern of body; 501 — femoral line; 502 — last sternite of male; 503–504 — male genitalia; 505 — siphon; 506 — apex of siphon; 507 — genital plate; 508 — receptaculum seminis; 509 — infundibulum.

reaching to apex of elytra. Arch of femoral line (Fig. 501) reaching close to posterior margin and then running, over a short distance, parallel to it, and where it is near to posterior margin there is a distinct additional branch running slightly arch-like towards anterior angle of segment. Last sternite in male (Fig. 502) with irregular apices, posterior margin notched very narrowly and with middle faintly sclerotized. Last sternite in female with apices short and lateral margin as if bent at mid-width.

Length 4–5 mm.

Male genitalia as in Figs. 503–504. Penis longer than parameres, at apex strongly narrowed and reflexed, when viewed from above with lobate processes at sides, such processes are also underneath and they are elongate anteriorly. Penis 0.5 mm long, 0.25 mm wide in lateral view, 0.35 mm wide in ventral view. Siphon (Fig. 505) short, very massive, with a big siphonal sack. Apex of siphon as in Fig. 506.

Female genitalia. Genital plates (Fig. 507) arranged a little obliquely, pear-shaped, base narrow, short, sexual calli small. Genital plate 0.43 mm long,

http://rcin.org.pl

0.24 mm wide. Receptaculum seminis (Fig. 508) strongly curved, with a bifurcate nodulus and fine striae on cornu. Infundibulum as in Fig. 509.

Because of a small scutellum the species is included into this genus, but judging by the structure of femoral line, male genitalia and receptaculum seminis it should belong to another genus. The above characters make it most similar to the genus *Coccinella*.

T. trilineata occurs in various habitats, both forest and steppe ones. However, it lives mainly in wet habitats, such as various shrubs at water. In dry habitats it was collected on *Caragana* and *Artemisia*.

Bulaea Muls.

The genus includes only two species, one occurring from Europe to Asia, the other only in India and Nepal. They are fairly big, distinguished easily from others because of the structure of claws. Scutellum relatively small. Prosternal process with costae. Mesosternal episterna white.

Only one species occurs in Mongolia.

Bulaea lichatschovi (Humm.)

Mongolia constitutes the eastern border of the territory of the species.

Body round, very convex. Head testaceous with two black spots behind eyes. Pronotum yellowish, occasionally with a pink shade, with one small and 6 big black spots. The small spot which is situated immediately before scutellum may be evanescent. Elytra yellowish with a pink shade, each with 9 black spots of almost the same size and distributed evenly and with one common black spot on scutellum (Fig. 510). Legs and underside of body brownish, sometimes metasternal sides darkened.

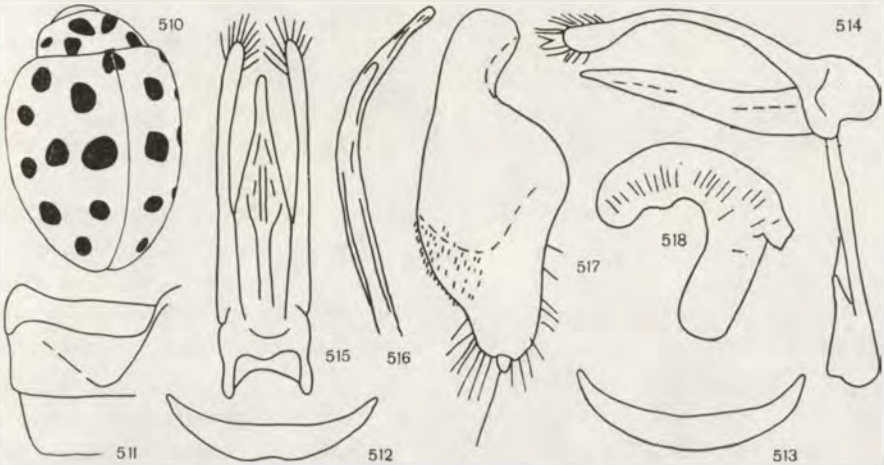
Punctures on head small, arranged very closely, areas with shallow microsculpture in the shape of irregular dashes arranged radially at punctures. Punctures on pronotum of similar size as those on head, arranged very closely, areas with microsculpture more distinct than on head and irregular. Elytral punctures slightly bigger than pronotal ones, arranged very closely, areas shining with traces of irregular dashes.

Anterior margin of pronotum slightly reflexed anteriorly. Anterior and posterior angles broadly rounded. Lateral margin evenly arcuate. Pronotal sides narrowly yet distinctly reflexed. Humeral tubercles on elytra big, strongly protruding, at the same interval from anterior and lateral margins. Lateral reflexion of elytra narrow, but strong, not reaching to elytral apex. Arch of femoral line (Fig. 511) reaching close to posterior margin and bending towards anterior angle and here it is frequently interrupted to various degree. Last sternite in male (Fig. 513) short, with apices acute.

http://rcin.org.pl

Length 4.5–5.5 mm.

Male genitalia as in Figs. 514–515. Penis as if slightly bent at mid-length, shorter than parameres, when viewed from below strongly narrowing from mid-length to apex, apex rounded. Penis 0.68 mm long, 0.15 mm wide in lateral view, 0.15 mm wide in ventral view. Siphon slender, apex slightly reflexed (Fig. 516).



Figs. 510–518. *Bulaea lichatschovi* (Hum.). 510 — outline and pattern of body; 511 — femoral line; 512 — last sternite of male; 513 — last sternite of female; 514–515 — male genitalia; 516 — apex of siphon; 517 — genital plate; 518 — receptaculum seminis.

Female genitalia. Genital plates (Fig. 517) narrowed et apex and base, strongly pubescent. Genital plate 0.45 mm long, 0.2 mm wide. Receptaculum seminis (Fig. 518) with fine striae on cornu.

The species is halophilous.

Adalia Muls.

The genus includes species of medium size and a little depressed. They are similar to species of the genus *Coccinella* L. from which they differ by the structure of prosternum and the shape of femoral line. Prosternal process narrow, convex, without costae. Femoral line curved in the shape of almost a semicircle. Claws with a small tooth at base. Colouration of elytra very variable, the variability in particular species overlaps. Species from this genus are difficult to distinguish. The difficulty is made even greater by the fact that various species can hybridize quite freely. Numerous pairs in copula between *A. bipunctata* and *A. fasciatopunctata* have been observed in Mongolia.

http://rcin.org.pl

Five species have been found in Mongolia.

Adalia conglomerata (L.)

The species is widely distributed from Europe to Japan.

Body faintly convex, somewhat depressed, in the shape of a fairly narrow and elongate oval. Head black with quite a big yellowish spot at middle. Pronotum yellowish with a black M-shaped spot at middle. Elytra with a black suture and each with 6 black spots (Fig. 529) arranged according to the pattern 1–3–2. The spots are frequently interconnected transversely and longitudinally or merge with the black colour of suture (Fig. 519). Underside of body black, often abdominal lateral margins lighter. Legs brownish, occasionally with femora darker.

Punctures on head small, shallow, sparsely arranged, areas with distinct, but not very even reticulate microsculpture. Punctures on pronotum of similar size as those on head, but arranged more sparsely, areas with shallow reticulate microsculpture. Puncturation of elytra consists of big and small punctures. Punctures are deep and arranged very closely, areas with few small irregular dashes.

Anterior margin of pronotum slightly reflexed anteriorly. Anterior angles quite broadly rounded, faintly produced anteriorly. Posterior angles broadly rounded. Lateral margin of pronotum evenly arcuate. Humeral tubercles big, quite distinctly closer to anterior margin than to lateral one. Lateral reflexion of elytra narrow, practically limited to anterior half. Arch of femoral line (Fig. 530) reaching to two-thirds of length of segment, apex of femoral line closer to anterior margin than to lateral one. Last sternite in male (Fig. 531) short, with posterior margin faintly curved. Last sternite in female (Fig. 532) with posterior margin somewhat angular at middle.

Length 3–4.5 mm.

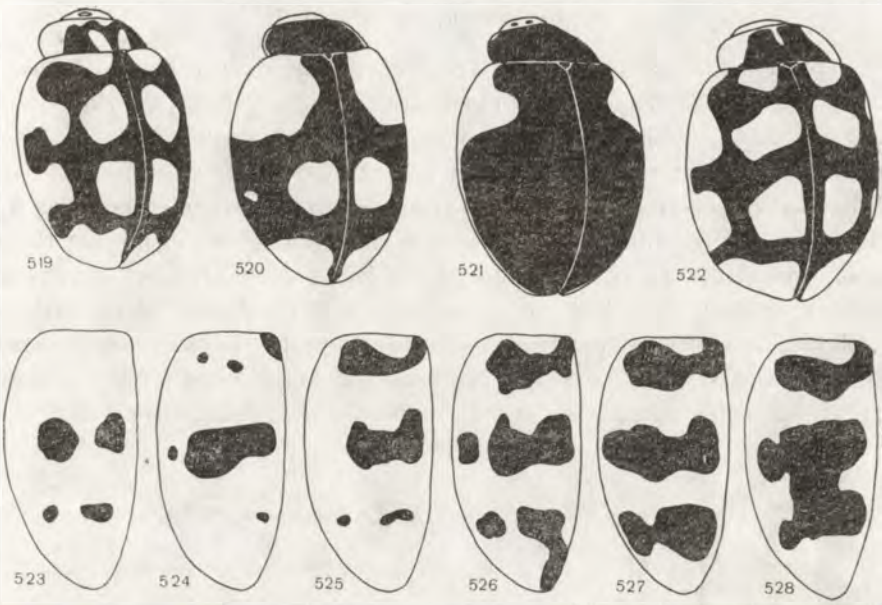
Male genitalia as in Figs. 533–534. Penis evenly narrowing from base to apex, apex reflexed a little, but so that lower margin evenly arcuate. Penis 0.47 mm long, 0.14 mm wide in lateral view, 0.15 mm wide in ventral view. Apex of siphon as in Fig. 535.

Female genitalia. Genital plates (Fig. 536) curved sinuately. Base short and narrow. Genital plate 0.4 mm long, 0.21 mm wide. Receptaculum seminis (Fig. 537) narrow, curved only at apex.

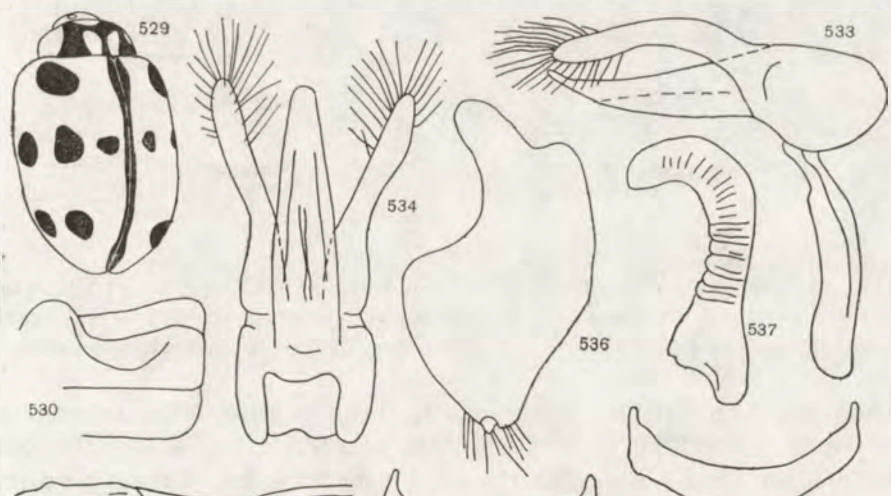
The species is quite easily distinguished from others by the elytral pattern. Certain forms with spots confluent resemble colourful forms of *A. decempunctata* and *A. fasciatopunctata*, but they differ because the light colour of elytra is confluent along the whole of lateral margin.

The species is rare in Mongolia and separate specimens were collected in various habitats.

http://rcin.org.pl



Figs. 519–528. Outline and pattern of the body and pattern of the elytra. 519 – *Adalia conglomerata* (L.); 520–521 – *Adalia bipunctata* (L.); 522–528 – *Adalia fasciatopunctata* (Fald.).



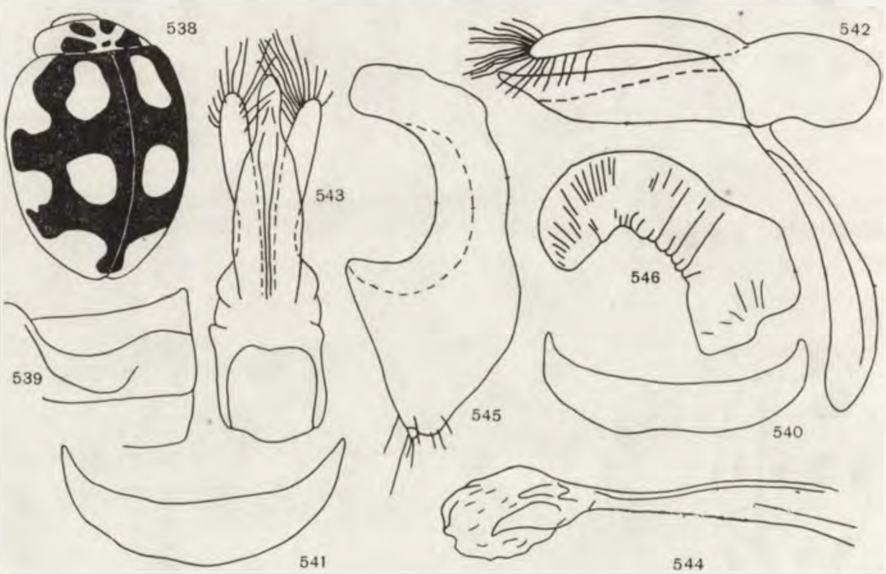
Figs. 529–537. *Adalia conglomerata* (L.). 529 – outline and pattern of body; 530 – femoral line; 531 – last sternite of male; 532 – last sternite of female; 533–534 – male genitalia; 535 – apex of siphon; 536 – genital plate; 537 – receptaculum seminis.

http://rcin.org.pl

Adalia decempunctata (L.)

The species has been recorded from Mongolia on the basis of two specimens (Bielawski 1975), but a closer examination has revealed that one belonged to *A. fasciatopunctata*, the other to *A. decempunctata*.

Body faintly convex, in the form of a broad oval. Head yellowish with a black base or black with yellow spots at eyes. Pronotum yellowish with 5 black spots, frequently interconnected or diffused so that they cover almost the whole surface of pronotum. In the specimen from Mongolia elytra are orange-yellow with a black pattern (Fig. 538) and they look as if they were black with 5 light spots. Elytral pattern very variable and formed by 5 black spots arranged according to the pattern 1–3–1. Underside of body black, only margins of abdomnial segments and mesosternal epimera, light. Legs brownish.



Figs. 538–546. *Adalia decempunctata* (L.). 538 – outline and pattern of body; 539 – femoral line; 540 – last sternite of male; 541 – last sternite of female; 542–543 – male genitalia; 544 – apex of siphon; 545 – genital plate; 546 – receptaculum seminis.

Anterior margin of pronotum slightly reflexed anteriorly. Anterior angles almost straight, a little produced anteriorly, posterior angles broadly rounded. Lateral margin evenly arcuate. Humeral tubercles big, strongly protruding and situated a little closer to anterior margin than to lateral one. Lateral reflexion of elytra reaching almost to apex. At the back of elytra there most frequently occurs a fold which may obliterate entirely. Arch of femoral line (Fig. 539) reaching near to posterior margin. Last sternite in male (Fig. 540) with posterior margin slightly notched. Last sternite in female (Fig. 541) long, with posterior margin evenly arcuate.

http://rcin.org.pl

Length 4–5 mm.

Male genitalia as in Figs. 542–543. Penis slightly longer than parameres, in lateral view from base to about two-thirds of length of the same width, then narrowing towards apex, apex straight. Penis 0.55 mm long, 0.13 mm wide in lateral view, 0.15 mm wide in ventral view. Apex of siphon as in Fig. 544.

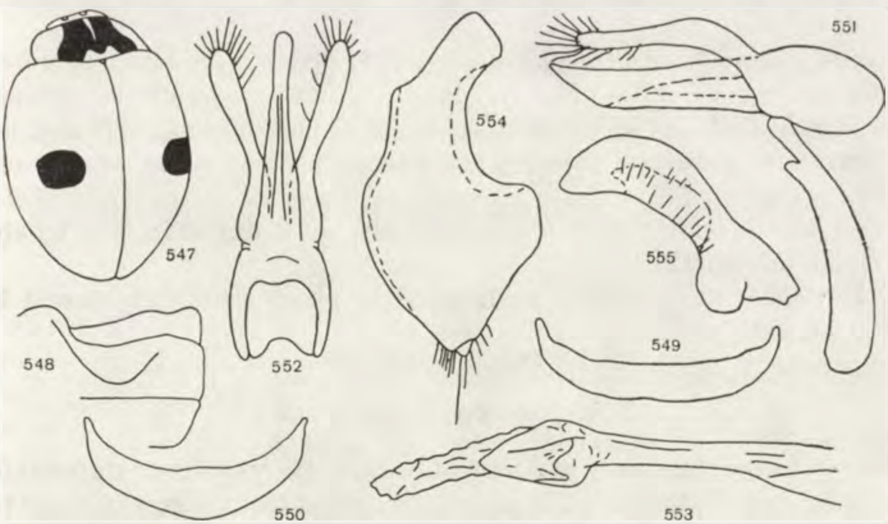
Female genitalia. Genital plates (Fig. 545) with base strongly reflexed, apex narrowing conically. Genital plate 0.57 mm long, 0.28 mm wide. Receptaculum seminis (Fig. 546) wide with nodulus not differentiated.

The specimen from Mongolia belongs to the colourful form which in external appearance resembles strongly colourful forms of *A. fasciatopunctata* and certain forms of *A. conglomerata*. It differs from these species by, among others, the white colour of mesosternal epimera.

The specimen was collected in a birch wood on southern slopes of a mountain steppe.

Adalia bipunctata (L.)

Body depressed, in the shape of a broad oval, the greatest width at mid-length. Head black with two oblong yellow spots at eyes, occasionally the spots entirely evanescent. Pronotum yellowish with a black M-shaped spot at middle, but the spot may be diffused so much that the pronotum becomes almost all black, only lateral margins remain yellowish. Elytra reddish with a black spot at middle (Fig. 547), the spot sometimes slightly widens transversely forming a band often reaching almost to lateral margin or there appears



Figs. 547–555. *Adalia bipunctata* (L.). 547 – outline and pattern of body; 548 – femoral line; 549 – last sternite of male; 550 – last sternite of female; 551–552 – male genitalia; 553 – apex of siphon; 554 – genital plate; 555 – receptaculum seminis.

http://rcin.org.pl

an additional spot near suture. Elytra may also be black with red spots (Figs. 520–521). No individuals intermediate between these two forms have been found in Mongolia. Underside of body and legs black.

Punctures on head fairly big, deep and closely arranged, areas with microsculpture faintly expressed, reticulate. Pronotal punctures slightly smaller than those on head, sparsely arranged, areas with very shallow, hardly discernible, reticulate microsculpture. Puncturation on elytra differentiated a little, punctures quite big and slightly smaller, the difference in size insignificant. Punctures arranged closely, areas smooth with a few scratches.

Anterior margin of pronotum straight. Anterior angles rounded, slightly produced anteriorly. Posterior angles broadly rounded. Lateral margins arcuate. Sides of pronotum distinctly reflexed. Humeral tubercles big, well expressed, situated almost at the same distance from anterior and lateral margins. Lateral reflexion of elytra narrow yet distinct and reaching to elytral apex. Arch of femoral line (Fig. 548) reaching a little beyond two-thirds of length of segment, apex almost three times closer to anterior margin than to lateral one. Last sternite in male (Fig. 549) short with posterior margin slightly notched. Last sternite in female (Fig. 550) quite long, with apices narrow and elongate, posterior margin in the shape of an arch.

Length 3.5–5.5 mm.

Male genitalia as in Figs. 551–552. Penis a little longer than parameres, apex from outside somewhat truncate obliquely. Pubescence on parameres poor. When viewed from below penis is very narrow and at apex slightly widened club-like. Penis 0.64 mm long, 0.15 mm wide in lateral view, 0.13 mm wide in ventral view. Siphon massive with a big siphonal sack. Apex of siphon as in Fig. 553.

Female genitalia. Genital plates (Fig. 554) before base strongly notched, base long and wide. Genital plate 0.67 mm long, 0.35 mm wide. Receptaculum seminis (Fig. 555) almost straight, at apex a little narrower and reflexed, nodulus differentiated into two parts, inner median part of cornu faintly sclerotized.

The species is related to *A. fasciatopunctata*, but it differs from it by elytral pattern and puncturation.

A. bipunctata was collected on herbaceous plants in slightly humid habitats. It frequently occurred on nettles.

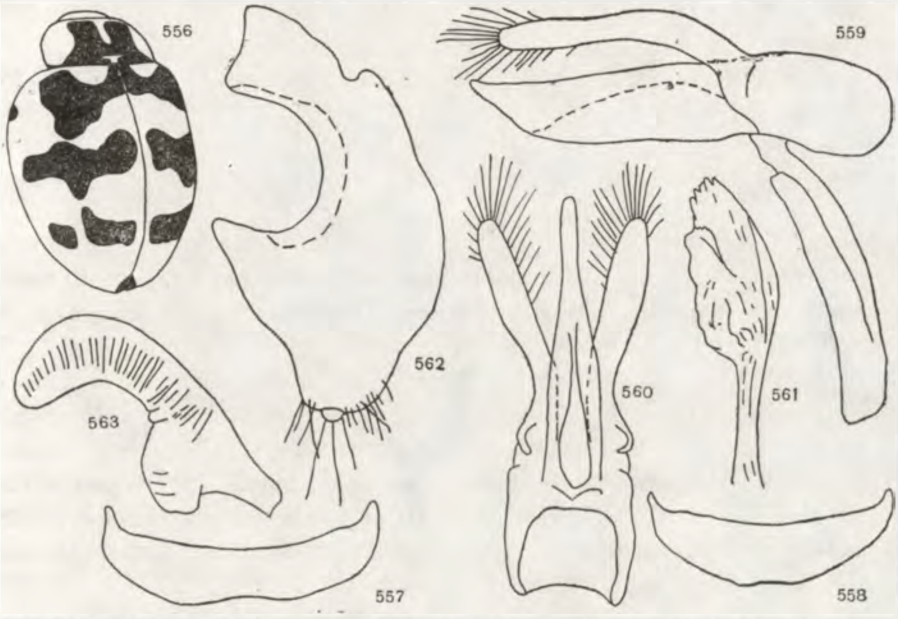
Adalia fasciatopunctata (Fald.)

The species occurs mainly in Asia and towards the west its territory extends to Asia Minor and the Caucasus. It has been recorded from Mongolia many times and is a common species there.

Body moderately convex, somewhat depressed, in the form of a wide oval, the greatest width slightly beyond mid-length. Head black with two

http://rcin.org.pl

yellow spots, their size varying in particular individuals. Pronotum yellowish with quite a big black spot at middle, the spot notched at front and before scutellum so that it resembles a little the letter M (Fig. 556). Sometimes the spot diffuses over almost the whole surface of pronotum and then pronotum is black with yellow angles. Scutellum black. Elytra yellowish, reddish or yellow-reddish with a black pattern (Figs. 522–528). The pattern is formed by seven spots on each elytron arranged according to the pattern 2–3–2 and by a scutellar spot common to both elytra. The spots may obliterate or grow bigger and can be interconnected in various ways. Frequently at the apex of elytra there is a small black spot. Underside of body and legs black.



'igs. 556–563. *Adalia fasciatopunctata* (FALD.). 556 – outline and pattern of body; 557 – ast sternite of male; 558 – last sternite of female; 559–560 – male genitalia; 561 – apex of siphon; 562 – genital plate; 563 – receptaculum seminis.

Punctures on head of medium size, deep, closely arranged, areas with nicrosculpture in the form of irregular dashes, often interconnected. Pronotal unctures of similar size as those on head, shallow and sparsely arranged, areas vith faintly expressed microsculpture in the form of irregular dashes. Elytral uncturation consisting of big and small punctures, the difference in size very lear, punctures arranged closely, deep, areas between them practically smooth.

Anterior margin of pronotum reflexed anteriorly. Anterior angles rounded, roduced anterioly. Posterior angles broadly rounded. Lateral margins arcuate. ides of pronotum distinctly reflexed. Humeral tubercles big, protruding quite trongly, situated closer to anterior margin than to lateral one. Lateral reflexion

http://rcin.org.pl

of elytra distinct only in anterior half. Arch of femoral line reaching beyond two-thirds of lenght of segment. Last sternite in male (Fig. 557) with posterior margin notched. Last sternite in female (Fig. 558) with posterior margin slightly notched, apices short.

Length 5.5–6 mm.

Male genitalia as in Figs. 559–560. Penis wide at side, before apex truncate obliquely. Penis 0.7 mm long, 0.2 mm wide in lateral view, 0.15 mm wide in ventral view. Siphon quite massive, before apex strongly narrowed. Apex of siphon as in Fig. 561.

Female genitalia. Genital plates (Fig. 562) before base strongly notched, base short and wide. Genital plate 0.65 mm long, 0.36 mm wide. Receptaculum seminis (Fig. 563) with cornu reflexed and nodulus modified. On cornu numerous striae.

The species occurs in great numbers in humid habitats on various perennial plants, particularly on nettles. Great numbers were also found on different shrubs and on deciduous trees. Fairly common on birches.

Adalia frigida (Schn.)

The species occurs only in the north and its territory extends from northern Europe to North America. The southernmost localities are in Mongolia. From Mongolia it was recorded by Munster in 1923.

Body faintly convex, somewhat depressed, in the form of a wide oval. Head black with two small yellowish spots at eyes. Pronotum yellowish with a black spot in the form of the letter M and with two small spots at sides. The spots frequently confluent. Scutellum brownish or black. Elytra red with two transverse black spots (Fig. 564) formed from small spots arranged according to the pattern 3–2. Ground around the spots lighter and also lateral margins of elytra lighter. Underside of body and legs black.

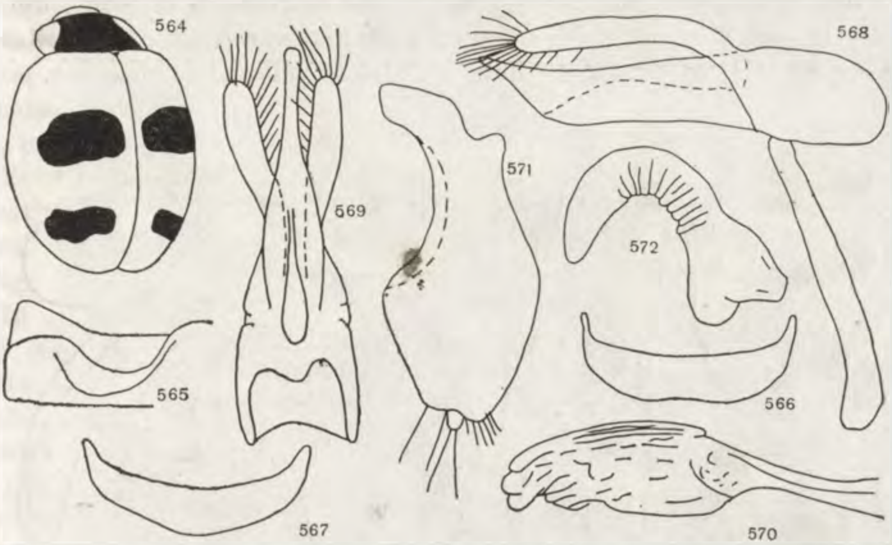
Punctures on head of medium size, hardly discernible, sparsely arranged, areas with deep reticulate microsculpture. Pronotal punctures of similar size as those on head, sparsely arranged, areas with microsculpture fairly distinct, reticulate. Punctures on elytra quite big, deep, arranged very closely, areas smooth. There occurs an insignificant difference in the size of punctures.

Anterior margin of pronotum almost straight. Anterior and posterior margins broadly rounded, anterior ones a little produced anteriorly. Pronotal margins arcuate, pronotal sides reflexed distinctly. Humeral tubercles large, faintly indicated. Lateral reflexion of elytra narrow, reaching far towards back. Arch of femoral line (Fig. 565) reaching to three-fourths of length of segment. Last sternite in male (Fig. 566) with apices narrow and long, posterior margin notched a little. Last sternite in female (Fig. 567) with posterior margin arcuate, apices acute.

Length 3.5–4.5 mm.

http://rcin.org.pl

Male genitalia as in Figs. 568–569. Penis longer than parameres, in lateral view slightly notched, apex elongate. Penis 0.68 mm long, 0.17 mm wide in lateral view, 0.15 mm wide in ventral view. Apex of siphon as in Fig. 570.



Figs. 564–572. *Adalia frigida* (Schn.). 564 – outline and pattern of body; 565 – femoral line; 566 – last sternite of male; 567 – last sternite of female; 568–569 – male genitalia; 570 – apex of siphon; 571 – genital plate; 572 – receptaculum seminis.

Female genitalia. Genital plates (Fig. 571) before base at one side notched over a long distance, at the other very short, base narrow, short. Genital plate 0.55 mm long, 0.26 mm wide. Receptaculum seminis (Fig. 572) with a strongly reflexed cornu which is narrower at apex, nodulus modified into two part.

In Mongolia the species is rare, found on willows, birches and hagberries.

Coccinella L.

Species here belonging are big or of medium size, most frequently of body strongly compressed and of almost circular shape. Antennae only slightly longer than the width of frons. Antennal club compact. Head black with two yellow spots at eyes, sometimes also anterior margin of head yellow. Pronotum black with a whitish-yellow spot in anterior angles. Colouration of elytra reddish or yellowish with black spots. Legs black. Prosternal process with two costae, that do not reach to anterior margin. Mesosternum without a notch at front. Femoral line bifurcate.

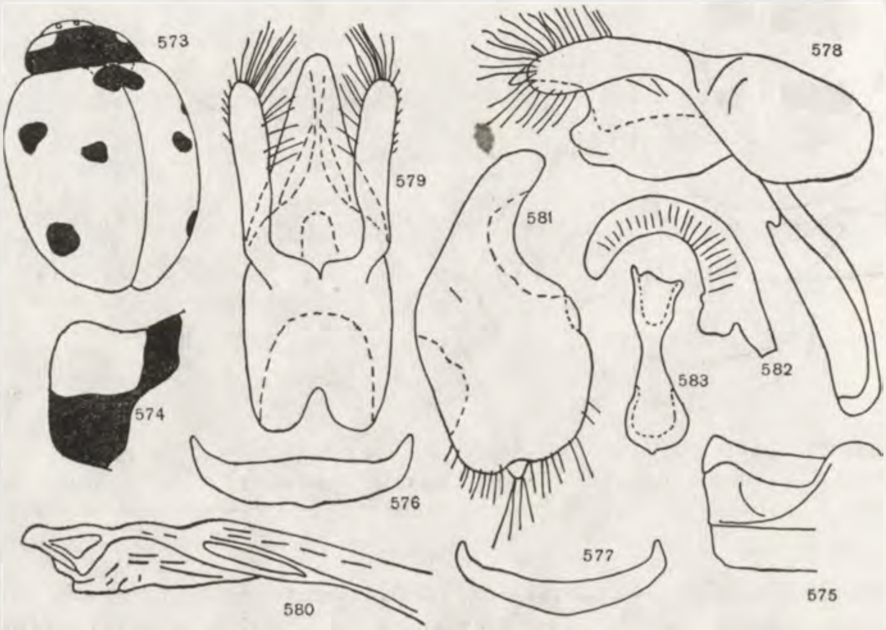
Nine species were recorded in Mongolia.

http://rcin.org.pl

Coccinella septempunctata L.

The species occurs in great numbers throughout the Palaearctic and in India. In Japan it constitutes a separate subspecies.

Body strongly convex, in the shape of a wide oval. Pronotal spot wide, almost square and reaching slightly to beyond mid-length of pronotum (Fig. 574). Elytra with 3 small black spots on each and one common scutellar spot (Fig. 573). At sides of scutellum there is a strong yellowish lightening.



Figs. 573–583. *Coccinella septempunctata* L. 573 — outline and pattern of body; 574 — lateral spot on pronotum; 575 — femoral line; 576 — last sternite of male; 577 — last sternite of female; 578–579 — male genitalia; 580 — apex of siphon; 581 — genital plate; 582 — receptaculum seminis; 583 — infundibulum.

Punctures on head large, closely arranged, areas with distinct microsculpture. Punctures on pronotum slightly smaller than those on head, closely arranged, areas with feebly indicated microsculpture. Punctures on elytra fairly big, closely arranged, there is a small difference in the size of spots, areas with faintly indicated miscrosculpture in the shape of shallow irregular dashes.

Anterior margin of pronotum straight. Anterior angles distinctly produced anteriorly. Lateral margins feebly arcuate. Humeral tubercles big, faintly indicated. Lateral ridge of elytra wide in anterior half, narrow in posterior one, reaching to the apex of elytra. End of femoral line (Fig. 575) close to lateral margin and the end of the branch closer to anterior margin than to lateral one. Last sternite in male (Fig. 576) at middle of posterior margin slightly

http://rcin.org.pl

curved. Last sternite in female (Fig. 577) short, with posterior margin not very evenly arcuate.

Length 6–8 mm.

Male genitalia as in Figs. 578–579. Penis slightly longer than parameres, when viewed from above evenly narrowing from base towards apex, apex broadly rounded. Penis 1.0 mm long, 0.5 mm wide in lateral view, 0.65 mm wide in ventral view. In lateral view the width of penis varies because the lower part is feebly sclerotized in the form of folds. Siphon with a big and wide siphonal sack, massive. Apex of siphon as in Fig. 580.

Female genitalia. Genital plates (Fig. 681) pear-shaped with a narrow base, strongly pubescent. Genital plate 0.65 mm long, 0.32 mm wide. Receptaculum seminis (Fig. 582) lunulate with numerous striae on cornu. Infundibulum as in Fig. 583.

In external appearance the species is most similar to *C. divaricata*, but is easily distinguished from it by the size of elytral spots and by elytral microsculpture. In the numerous specimens from Mongolia there was practically no variability in elytral pattern. All the individuals examined were similarly coloured, but in some of them there were connections between spots 1 and 1/2, and 1/2 and 1 strongly narrowed. In comparison with European individuals there was a slight difference, viz., spots on elytra were usually slightly smaller than those in European specimens.

The species is one of the commonest in Mongolia. It occurs in great numbers and in various habitats on herbaceous and perennial plants, occasionally it lives on bushes, never on trees.

Coccinella withi Muls.

The territory of this species is restricted to eastern Asia.

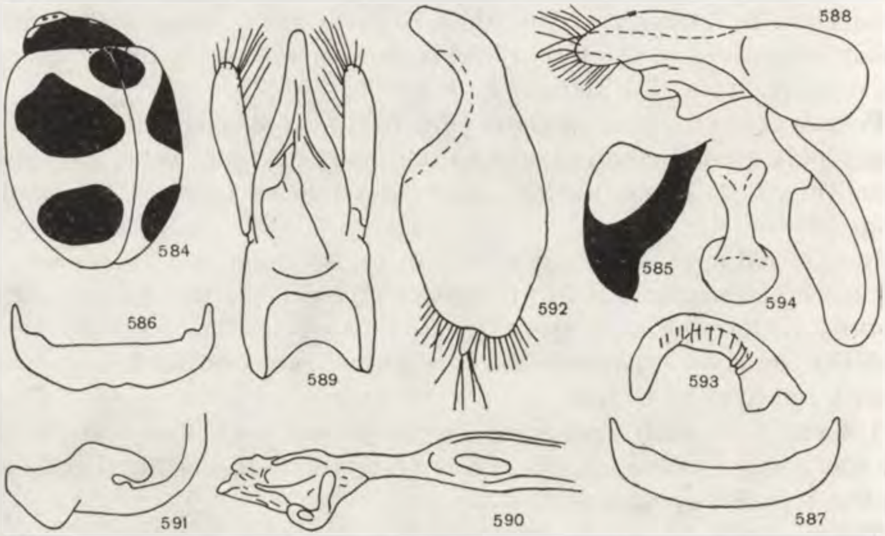
Body strongly convex, in the form of a very broad oval. Spot in anterior angles of pronotum large, reaching to slightly beyond mid-length of pronotum (Fig. 585). Elytra red-brownish, lightening at scutellum very small. Scutellar spot big, almost circular. Subhumeral spot arranged obliquely, at the same interval from lateral margin and from suture (Fig. 584). Spot in the posterior half of elytra big, in particular individuals more or less transverse, always situated closer to lateral margin than to suture.

Punctures on head big and slightly smaller, arranged fairly closely, shallow, areas with strongly indicated reticulate microsculpture. Punctures on pronotum slightly smaller than those on head, arranged very closely, areas with very strongly indicated, reticulate microsculpture. Punctures on elytra small, smaller than on pronotum, shallow and closely arranged, areas with strongly indicated reticulate miscrosculpture. Body dull due to the well-developed microsculpture.

Anterior margin of pronotum reflexed anteriorly. Anterior angles strongly rounded and produced anteriorly. Lateral margin reflexed evenly arcuate.

http://rcin.org.pl

Humeral tubercles large, feebly indicated. Elytral lateral ridge in anterior half wide, in posterior one narrow. Branch of femoral line quite short and directed towards anterior angles. Last sternite in male (Fig. 586) with posterior margin notched S-like. Last sternite in female (Fig. 587) quite long, with apices acute and long, posterior margin faintly arcuate.



Figs. 584–594. *Coccinella withi* Muls. 584 – outline and pattern of body; 585 – lateral spot on pronotum; 586 – last sternite of male; 587 – last sternite of female; 588–589 – male genitalia; 590 – apex of siphon; 591 – siphonal sack; 592 – genital plate; 593 – receptaculum seminis; 594 – infundibulum.

Length 6–7 mm.

Male genitalia as in Figs. 588–589. Penis longer than parameres, when viewed from below it is widest immediately before base, from one-third of base narrowing towards apex., apex wide and slightly elongate. Penis 0.75 mm long, 0.3 mm wide in lateral view, 0.35 mm wide in ventral view. Siphon with a big siphonal sack (Fig. 591), massive. Apex of siphon as in Fig. 590.

Female genitalia. Genital plates (Fig. 592) relatively elongate, base long and fairly wide. Sexual calli big, pubescence rich. Genital plate 0.67 mm long, 0.3 mm wide. Receptaculum seminis (Fig. 593) lunulate with a few striae. Infundibulum as in Fig. 594.

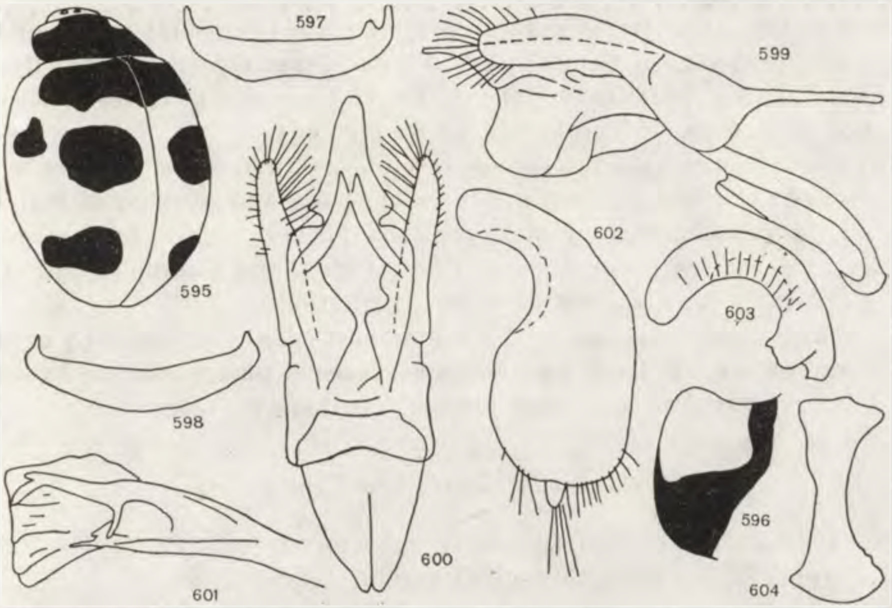
The author personally collected great numbers of the species on larch-trees.

Coccinella transversoguttata Fald.

The territory of this species extends from Lapland through Siberia, northern China to northern America and Mexico. It has been recorded from Mongolia many times.

http://rcin.org.pl

Body strongly convex, in the form of a wide oval. Spot in the anterior angles of pronotum big, slightly beyond mid-length of pronotum (Fig. 596), inner margins of the spot at anterior margin a little arcuate. On each elytron there are 4 spots arranged in transverse rows (Fig. 595). Humeral and scutellar spots confluent and forming a transverse band. Preapical spot transverse.



Figs. 595–604. *Coccinella transversoguttata* FALD. 595 – outline and pattern of body; 596 – lateral spot on pronotum; 597 – last sternite of male; 598 – last sternite of female; 599–600 – male genitalia; 601 – apex of siphon; 602 – genital plate; 603 – receptaculum seminis; 604 – infundibulum.

Punctures on head of medium size, sparsely arranged, areas with reticulate microsculpture. Punctures on pronotum slightly smaller than on head, sparsely arranged, areas with faintly indicated reticulate microsculpture of broken mash. Punctures on elytra of medium size, arranged quite closely, areas with traces of microsculpture in the form of numerous very minute punctures and very fine, less numerous, irregular dashes.

Anterior margin of pronotum straight. Anterior angles rounded, slightly produced anteriorly. Sides very faintly arcuate. Humeral tubercles indicated very feebly, situated close to anterior margin. Lateral reflexion of elytra widest at the part from humeral tubercle to mid-length. End of femoral line reaching almost to lateral margin, ist branch short, not connected with the main one. Last sternite in male (Fig. 597) on the inside before apices with small processes, posterior margin clearly notched. Last sternite in female (Fig. 598) with posterior margin distinctly arcuate.

Length 5.9–7.2 mm.

http://rcin.org.pl

Male genitalia as in Figs. 599–600. Penis longer than parameres, in lateral view at apex elongated into a short acute point, when viewed from below at sides strongly notched, the notch as if dividing the penis into two parts. Basal part with a lobate process. Penis 0.95 mm long, 0.55 mm wide in lateral view, 0.47 mm wide in ventral view. Siphon with a very wide siphonal sack. Apex of siphon as in Fig. 601.

Female genitalia. Basal part of genital plate (Fig. 602) wide, long and curved. Pubescence rich. Genital plate 0.5 mm long, 0.25 mm wide. Receptaculum seminis (Fig. 603) curved, at mid-length from the inside less sclerotized, striae not numerous. Infundibulum as in Fig. 604.

In external appearance the species resembles *C. trifasciata* L. from which it differs in body size and in spots not interconnected and situated at mid-length of elytra. In the structure of male genitalia it is very similar to *C. magnopunctata* RYB., a species occurring in Tibet, China and Cashmere and is close to *C. divaricata* OL., a species of wide distribution.

C. transversoguttata is one of the commonest species in Mongolia occurring in various habitats. It lives mainly on herbaceous plants and on bushes, on trees it is found seldom and most probably is there by chance.

Coccinella tianshanica DOBZH.

The distribution of this species is not known sufficiently. Its territory extends from Afghanistan through Tienshan to Mongolia.

Body quite strongly convex, in the shape of a very wide oval so that it is almost circular. Spot in the humeral angles of pronotum (Fig. 606) slightly elongate and its posterior margin as if a little notched. Lightening at scutellum very small. Scutellar spot quite big, circular. On each elytron also 4 spots more, big at suture and small at lateral margin; spots in each pair of more or less the same size (Fig. 605).

Punctures on head small, shallow, hardly discernible, arranged sparsely, areas with shallow microsculpture. Punctures on pronotum a little bigger than those on head, quite deep, arranged not very closely, areas with faintly indicated microsculpture. Punctures on elytra of medium size, arranged quite closely, areas with faintly indicated microsculpture in the form of minute punctures and irregular dashes. There is a slight difference in the size of punctures.

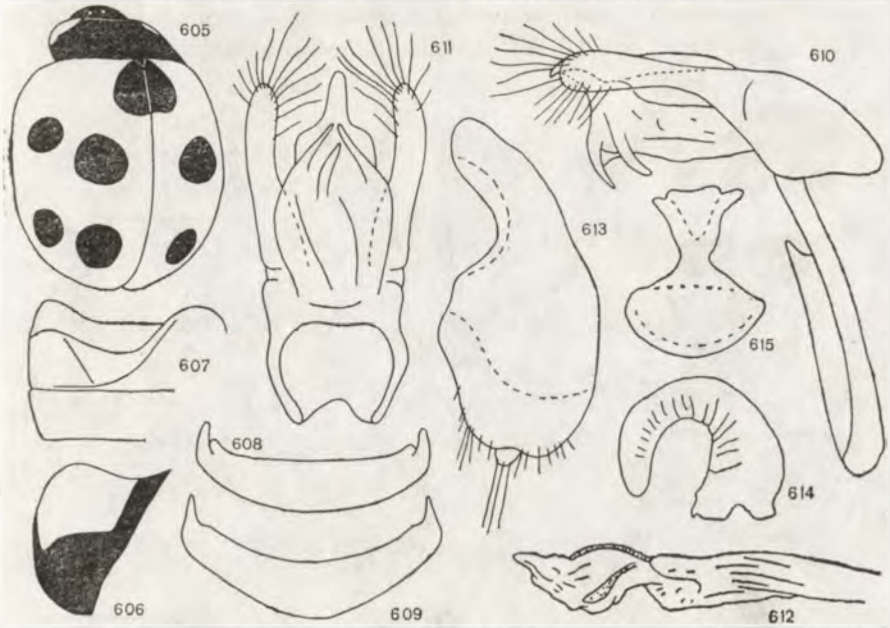
Anterior margin of pronotum slightly reflexed anteriorly. Anterior angles broadly rounded, slightly produced anteriorly. Lateral margin very feebly arcuate, almost straight. Humeral tubercles faintly indicated, situated closer to anterior margin than to lateral one. Lateral reflexion of elytra narrow. Branch of femoral line (Fig. 607) not connected and running slightly obliquely almost throughout the whole width of segment, end of femoral line removed from lateral margin. Last sternite in male (Fig.608) with posterior margin arcuate.

http://rcin.org.pl

Last sternite in female (Fig. 609) with posterior margin strongly curved at mid-length.

Length 4.8–6 mm.

Male genitalia as in Figs. 610–611. Penis as long as parameres, in lateral view slightly reflexed at apex, lower side feebly sclerotized with two somewhat hook-like processes, when viewed from below with apex rapidly narrowed. Penis 0.67 mm long, 0.3 mm wide in lateral view, 0.35 mm wide in ventral view. Siphon faintly curved, with a relatively narrow siphonal sack. Apex of siphon as in Fig. 612.



Figs. 605–615. *Coccinella tianshanica* DOBZH. 605 – outline and pattern of body; 606 – lateral spot on pronotum; 607 – femoral line; 608 – last sternite of male; 609 – last sternite of female; 610–611 – male genitalia; 612 – apex of siphon; 613 – genital plate; 614 – receptaculum seminis; 615 – infundibulum

Female genitalia. Base of genital plate (Fig. 613) quite wide and long, pubescence rich. Genital plate 0.57 mm long, 0.26 mm wide. Receptaculum seminis (Fig. 614) strongly curved, striae not numerous. Infundibulum (Fig.615) very big.

In external appearance the species is very similar to *C. undecimpunctata* and *C. ainu* LEW., but in the structure of male genitalia resembles *C. iranica* DOBZH.

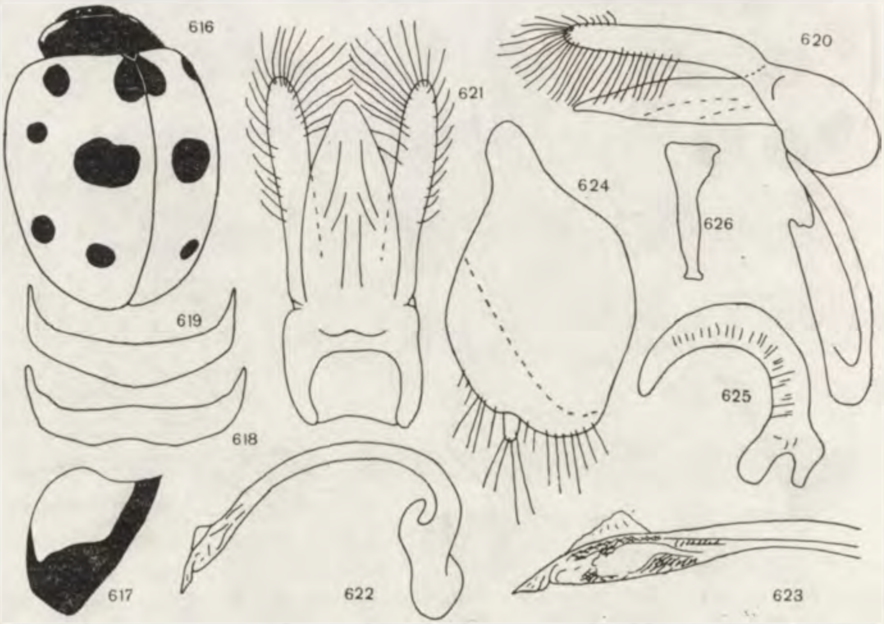
The species was collected in various habitats, often on ground and under stones.

http://rcin.org.pl

Coccinella quinquepunctata L.

The species was recorded by a number of authors some time ago but it has not been mentioned in more recent literature.

Body moderately convex, of almost circular shape. Spot on pronotum (Fig. 617) reaching distinctly to beyond mid-length, and its posterior border strongly arcuate. Specimens from Mongolia have 5 spots on each elytron and one common scutellar spot (Fig. 615). The spot at mid-length of elytra situated at suture is the biggest. European specimens most frequently have 2 spots on each elytron and one common scutellar spot. Siberian forms are considered to be a variety or even a subspecies (*C. arthurica* Jacobs.), but due to very insufficient material it is difficult to take a definite attitude.



Figs. 616–626. *Coccinella quinquepunctata* L. 616 — outline and pattern of body; 617 — lateral spot on pronotum; 618 — last sternite of male; 619 — last sternite of female; 620–621 — male genitalia; 622 — siphon; 623 — apex of siphon; 624 — genital plate; 625 — receptaculum seminis; 626 — infundibulum.

Punctures on head small, closely arranged, areas distinct, with very fine reticulate microsculpture. Punctures on pronotum bigger than those on head, deep and arranged quite closely, areas with distinct reticulate microsculpture. Elytral puncturation consisting of big and small punctures. Punctures deep and closely arranged, areas with a few very fine, irregular dashes.

Anterior margin of pronotum straight. Anterior angles faintly rounded, distinctly produced anteriorly. Lateral margin feebly arcuate. Sides of prono-

http://rcin.org.pl

tum reflexed narrowly. Humeral tubercles large, faintly indicated, situated at the same distance from anterior margin and from lateral one. Branch of femoral line reaching to anterior margin, end of femoral line situated immediately at lateral margin. Last sternite in male (Fig. 618) with apices narrow and long, lateral margin broadly notched. Last sternite in female (Fig. 619) with posterior margin somewhat bent at mid-width, ends narrow and long.

Length 3.5–4.9 mm.

Male genitalia as in Figs. 620–621. Penis as long as parameres, in lateral view straight, when viewed from below lobate and from one-third of length narrowing quite evenly towards apex. Pubescence of parameres very rich. Penis 0.7 mm long, 0.14 mm wide in lateral view, 0.46 mm wide in ventral view. Siphon (Fig. 622) fairly short, with a big siphonal sack. Apex of siphon as in Fig. 623.

Female genitalia. Genital plates (Fig. 624) very wide, with a very short and narrow base. Pubescence rich. Genital plate 0.45 mm long, 0.27 mm wide. Receptaculum seminis (Fig. 625) narrow and strongly curved, with nodulus distinctly bifurcate. Infundibulum (Fig. 626) very small.

Forms with eleven spots from Mongolia in their external appearance resemble *C. tianshanica* and *C. undecimpunctata*. However, they are easily distinguished by the elytral pattern. In the structure of male genitalia the species is similar to *C. hieroglyphica mannerheimi*.

The species is very rare in Mongolia and it was collected in various habitats.

Coccinella hieroglyphica mannerheimi Muls.

The subspecies was first described from Siberia as a separate species *C. mannerheimi* (Mulsant 1850) and later Weise (1892) considered it to be the subspecies *C. tricuspis mannerheimi*, and Dobzhansky (1926) the subspecies *C. hieroglyphica mannerheimi*. This opinion was confirmed by Brown (1962).

It occurs in eastern Siberia and in North America from Hudson Bay to Alaska. From Mongolia it has been reported many times.

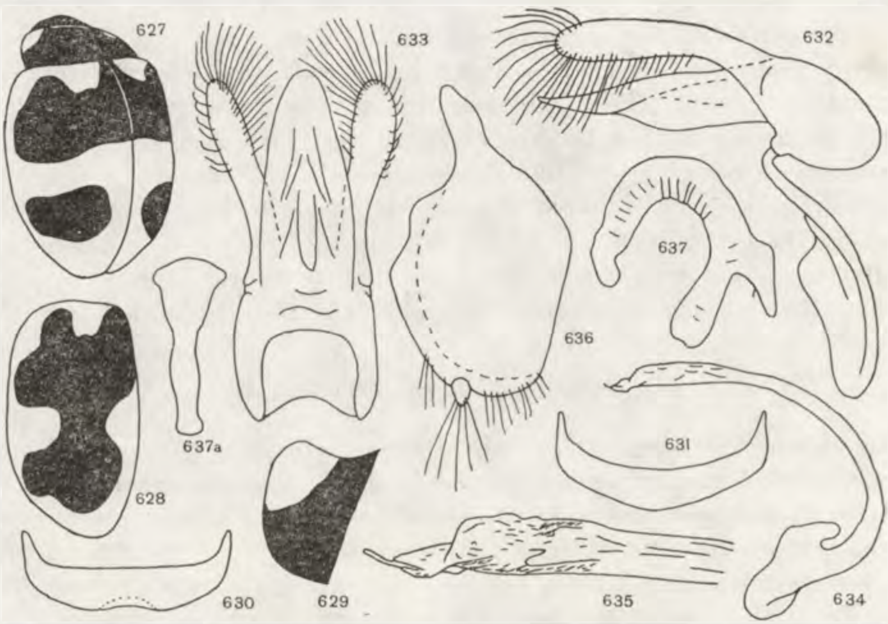
Body moderately convex, in the shape of a very strongly elongate oval. Spot in pronotal anterior angles (Fig. 629) more or less triangular. In anterior half of elytra a broad transverse band common to both elytra, in posterior half a big transverse spot (Fig. 627) situated in such a way that the interval from suture more than that from lateral margin. Among all the specimens from Mongolia examined by the author only two individuals had the band and spot interconnected (Fig. 628) and in their colouration the specimens resembled *C. hieroglyphica hieroglyphica* L.

Punctures on head of medium size, sparsely arranged, areas with distinct reticulate microsculpture. Punctures on pronotum a little smaller than those on head, sparsely arranged, areas with distinct reticulate microsculpture. Punturation of elytra consisting of very few big punctures and of numerous small

http://rcin.org.pl

ones. Punctures deep and arranged quite closely. Areas between punctures with fairly distinct microsculpture in the from of interconnected irregular dashes.

Anterior margin of pronotum almost straight. Anterior angles quite broadly rounded and produced anteriorly. Lateral margin very feebly arcuate. Pronotal margins reflexed narrowly. Humeral tubercles on elytra big, produced quite distinctly and situated closer to anterior margin than to lateral one. Lateral reflexion of elytra narrow, equally wide over the entire length. Branch of femoral line not reaching anterior margin. Last sternite in male (Fig. 630) with posterior margin slightly notched and less sclerotized in that place. Last sternite in female (Fig. 631) with posterior margin somewhat bent slightly at mid-width.



Figs. 627–637. *Coccinella hieroglyphica mannerheimi* Muls. 627 — outline and pattern of body; 628 — pattern of elytra; 629 — lateral spot on pronotum; 630 — last sternite of male; 631 — last sternite of female; 632–633 — male genitalia; 634 — siphon; 635 — apex of siphon; 636 — genital plate; 637 — receptaculum seminis; 637a — infundibulum.

Length 4–5 mm.

Male genitalia as in Figs. 632–633. Penis slightly longer than parameres, in lateral view slightly notched at apex, in ventral view with a wide and broadly rounded apex. Pubescence on parameres very rich. Penis 0.6 mm long, 0.15 mm wide in lateral view, 0.25 mm wide in ventral view. Siphon (Fig. 634) quite strongly curved, with a wide apex. Siphonal apex as in Fig. 635.

Female genitalia. Genital plates (Fig. 636) wide, with base very narrow and short. Genital plate 0.45 mm long, 0. 27 mm wide. Receptaculum seminis (Fig.

http://rcin.org.pl

637) narrow, unevenly curved at apex, nodulus strongly bifid. Infundibulum (Fig. 637a) narrow and quite long.

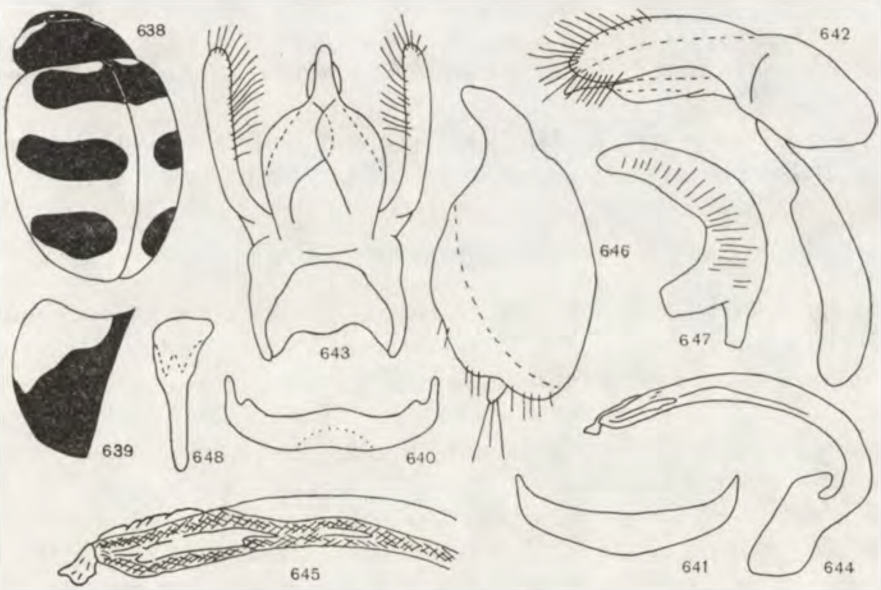
In the structure of male and female genitalia and in other characters such as the structure of elytra, the species is related most closely to *C. quinquepunctata*.

The subspecies is rare in Mongolia.

Coccinella trifasciata L.

The territory of the species is very wide and extends from northern Europe, throught Siberia and Tibet to North America. It has never been recorded in Korea or Japan. Many authors have reported it from Mongolia.

Body moderately convex, in the shape of a broad oval. Spot on pronotum (Fig. 639) of almost triangular shape and reaching distinctly to beyond mid-length of pronotum. On elytra three transverse bands (Fig. 638), the first of which joining the opposite one and streching from one humeral tubercle to the other.



Figs. 638–648. *Coccinella trifasciata* L. 638 – outline and pattern of body; 639 – lateral spot on pronotum; 640 – last sternite of male; 641 – last sternite of female; 642–643 – male genitalia; 644 – siphon; 645 – apex of siphon; 646 – genital plate; 647 – receptaculum seminis; 648 – infundibulum.

Punctures on head small, arranged quite closely, areas with very fine reticulate microsculpture. Punctures on pronotum bigger than those on head, deep and closely arranged, areas with distinct microsculpture in the form of

http://rcin.org.pl

broken reticule. Punctures on elytra big, deep, arranged closely, areas with microsculpture not very distinct and in the form of irregular dashes, partly interconnected.

Anterior margin of pronotum straight. Anterior angles broadly rounded. faintly produced anteriorly. Lateral margins arcuate. Sides of pronotum distinctly reflexed. Humeral tubercles marked very faintly. Lateral reflexion of elytra practically limited to the width of ridge. Arch of femoral line reaching almost to posterior margin, branch directed towards anterior angle, not reaching to anterior margin. Last sternite in male (Fig. 640) short, faintly curved, apices fairly wide, posterior margin faintly notched. Last sternite in female (Fig. 641) faintly but evenly curved.

Length 4–5 mm.

Male genitalia as in Figs. 642–643. Penis as long as parameres, in lateral view reflexed at apex, in ventral view very broad with apex strongly narrowed and elongate. Penis 0.5 mm long, 0.2 mm wide in lateral view, 0.38 mm wide in ventral view. Siphon (Fig. 644) fairly massive, with siphonal sack elongate. Apex of siphon as in Fig. 645.

Female genitalia. Genital plates (Fig. 646) relatively elongate with base short and narrow. Genital plate 0.5 mm long, 0.26 mm wide. Receptaculum seminis (Fig. 647) fairly wide, curved, with nodulus bifid. Infundibulum as in Fig. 648.

In Mongolia the species has been recorded quite frequently in various habitats. It lives on various perennial plants and on bushes and trees.

Coccinella divaricata OL.

The species is distributed very widely and occurs almost throughout the Palaearctic. From Mongolia it has been recorded several times. It has never been reported from Korea or Japan.

Body strongly convex in the form of a very broad but short oval. Spot on pronotum (Fig. 650) distinctly reaching to beyond mid-length, from the inside notched arcuately. Lightening at scutellum distinct, fairly big. Four spots on each elytron and one common scutellar spot of almost circular shape (Fig. 649). Median spot on suture and posterior spot big and of almost the same size. Occasionally there occurs a narrow connection between the median and posterior spots or between the median and humeral ones.

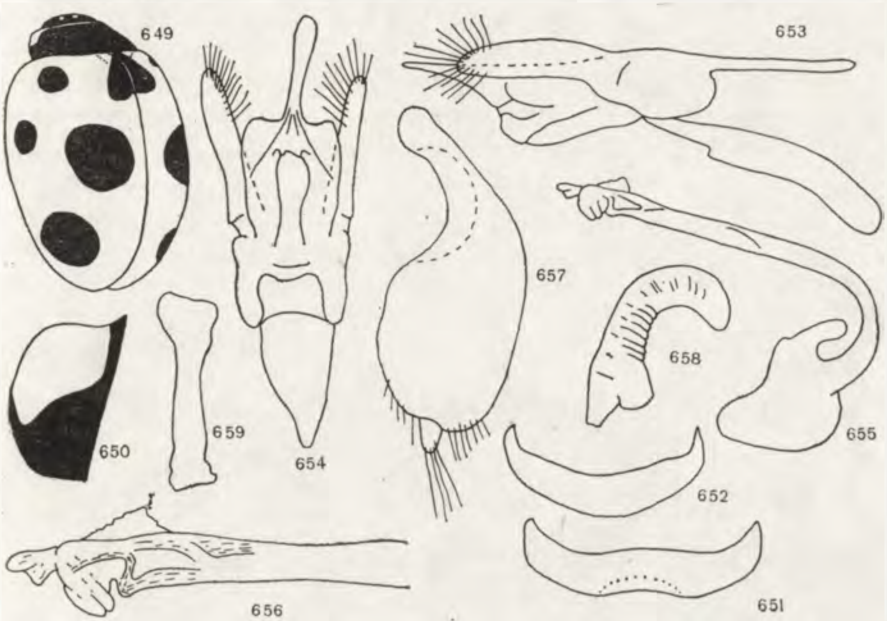
Punctures in the middle of head small, at sides slightly bigger, arranged sparsely, areas with fine reticulate microsculpture. Punctures on pronotum small, arranged sparsely, areas with distinct reticulate microsculpture. Punctures on elytra bigger than those on head, but small anyway and sparsely arranged, areas with distinct though irregular reticulate microsculpture. Upper surface of body dull.

Anterior margin of pronotum straight. Anterior margins broadly rounded,

http://rcin.org.pl

slightly produced anteriorly. Lateral margins clearly arcuate. Sides of pronotum reflexed. Humeral tubercles small, feebly marked, situated close to humeral angles. Branch of femoral line fairly long, terminating near anterior margin. Last sternite in male (Fig. 651) with posterior margin notched. Last sternite in female (Fig. 652) curved strongly.

Length 5.5–7.4 mm.



Figs. 649–659. *Coccinella divaricata* Ol. 649 — outline and pattern of body; 650 — lateral spot on pronotum; 651 — last sternite of male; 652 — last sternite of female; 653–654 — male genitalia; 655 — siphon; 656 — apex of siphon; 657 — genital plate; 658 — receptaculum seminis; 659 — infundibulum.

Male genitalia as in Figs. 653–654. Penis far longer than parameres, in lateral view at apex elongate in the form of a sharp point, in ventral view apex is narrow, highly elongate, distinctly separated from the wide part of penis. Penis 1.2 mm long, 0.4 mm wide in lateral view, 0.5 mm wide in ventral view. Basal part with a long lobate process. Siphon (Fig. 655) with siphonal sack strongly sclerotized and very wide. Apex of siphon as in Fig. 656.

Female genitalia. Genital plates (Fig. 657) elongate with base narrow and long. Sexual calli very big. Genital plate 0.63 mm long, 0.27 mm wide. Receptaculum seminis (Fig. 658) wide with nodulus feebly modified. Infundibulum (Fig. 659) narrow and very long.

In external appearance the species resembles *C. septempunctata* but it is easily distinguished from it by the size of elytral spots and by dull surface of body which is due to highly developed microsculpture. In the structure of female genitalia and particularly in the form of penis and the presence of a lo-

http://rcin.org.pl

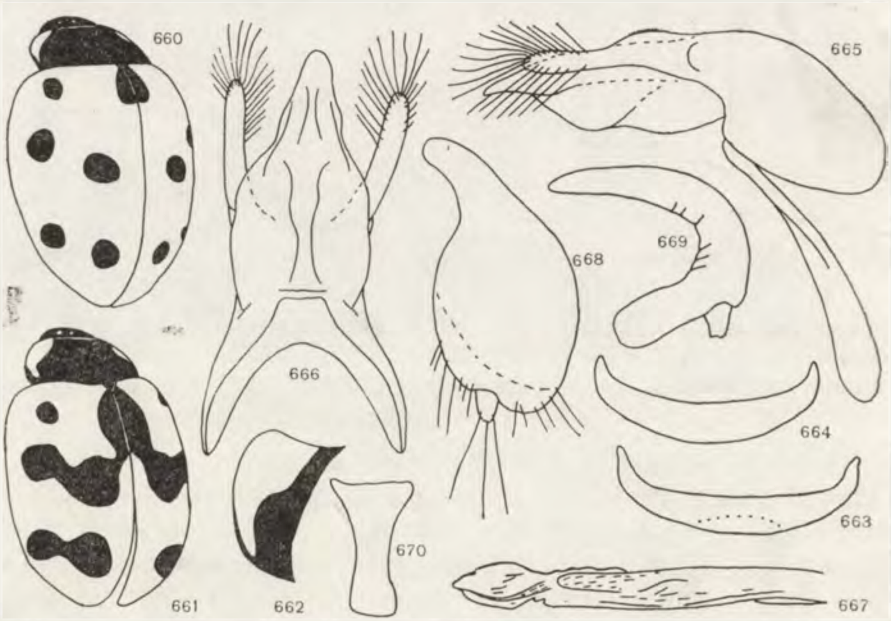
bate process on the basal part, the species is close to *C. transversoguttata* and *C. magnopunctata* Ryb.

The species has been collected in various habitats, both steppe and forest ones. It lives on herbaceous plants and on bushes and trees.

Coccinella undecimpunctata L.

The species is distributed very widely, it has been recorded from Mongolia many times.

Body moderately convex in the form of a broad oval. Pronotal spot (Fig. 662) reaching to far beyond mid-length of pronotum. Lightening at scutellum large, but not very distinct. On each elytron 5 spots and one small, elongate, common scutellar spot (Fig. 660). The pattern of the arrangement is 1–2–2. The spots are not very big, those situated at suture are usually slightly bigger than those at lateral margin. Occasionally there are connections between spots (Fig. 661).



Figs. 660–670. *Coccinella undecimpunctata* L. 660–661 – outline and pattern of body; 662 – lateral spot on pronotum; 663 – last sternite of male; 664 – last sternite of female; 665–666 – male genitalia; 667 – apex of siphon; 668 – genital plate; 669 – receptaculum seminis; 670 – infundibulum.

Punctures on head of medium size, arranged closely, areas with microsculpture fairly distinct and in the form of irregular, interconnected dashes. Elytral punctures large, deep, closely arranged, areas shiny with traces of very minute punctures and scratches.

http://rcin.org.pl

Anterior margin of pronotum almost straight. Anterior angles rounded very feebly and slightly produced anteriorly. Lateral margins arcuate not very evenly. Pronotal sides reflexed very narrowly. Humeral tubercles small, but fairly clearly marked, situated at the same distance from anterior margin and from lateral one. Last sternite in male (Fig. 663) short with apices wide and relatively long, posterior margin faintly arcuate. Last sternite in female (Fig. 664) curved quite strongly.

Length 3.5–5 mm.

Male genitalia as in Figs. 665–666. Penis longer than parameres, massive and big, parameres small. Apex of penis narrowed and elongate. Penis 0.66 mm long, 0.28 mm wide in lateral view, 0.35 mm wide in ventral view. Siphon feebly curved, slender, with siphonal sack small and elongate. Apex of siphon as in Fig. 667.

Female genitalia. Genital plates (Fig. 668) pear-shaped, with base quite wide but short. Genital plate 0.35 mm long, 0.17 mm wide. Receptaculum seminis (Fig. 669) slender, with cornu strongly elongate, almost without striae. Infundibulum (Fig. 670) fairly wide and short.

In external appearance the species resembles *C. ainu* LEW., the eastern form of *C. quinquepunctata* and *C. tianshanica*. Differences between these species have been discussed in a paper by BIELAWSKI (1957).

The species was collected in various habitats.

Coccinula DOBZH.

Species belonging here are not very big, of almost circular shape. Length of antennae almost the same as the width of frons. Base of elytra almost as wide as pronotum. Sides of elytra ridged, practically not reflexed. Prosternal process with costae not reaching to anterior margin. Mesosternum with a distinct roll on anterior margin. Mesosternal epimera and partly the whole of metasternal episterna white. Femoral line bifid. Mid- and hind tibiae with two spikes. Claws with a tooth at base.

Two species have been recorded from Mongolia.

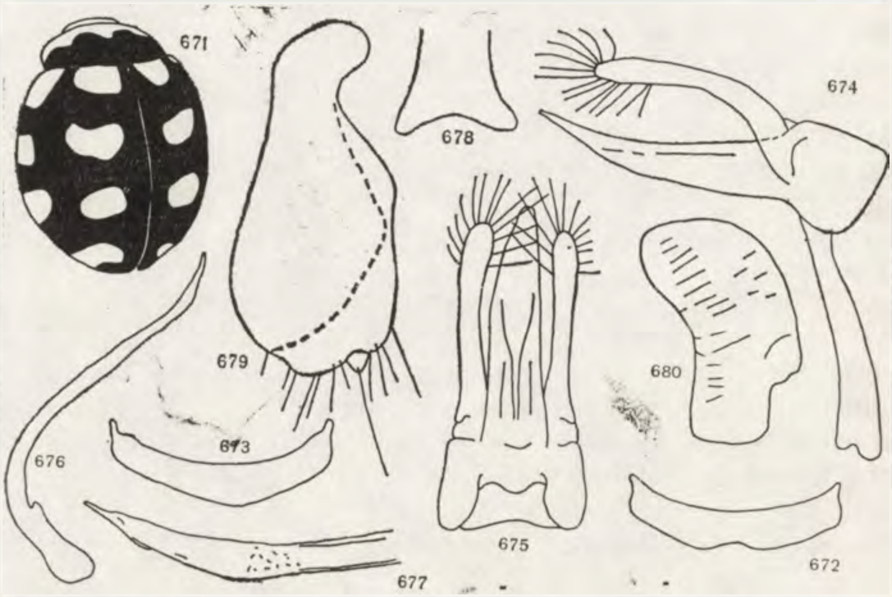
Coccinula quatuordecimpustulata sinensis (WS.)

The subspecies occurs on the eastern border of the territory of *C. quatuordecimpustulata* (L.) and it has been reported from the Amur Territory, Korea, Japan, Mongolia and from China.

Body strongly convex, almost semicircular. Head most frequently yellowish, often with a black base or sometimes black with two yellow spots at front. Pronotum black with anterior angles and anterior margin, yellowish, the two colours are separated by a sinuate line. Scutellum black. Elytra black with 7 yellow spots (Fig. 671) on each, arranged according to the pattern 2–2–2–1.

http://rcin.org.pl

The second spot at suture more or less notched at front, the spot situated in front of elytral apex arranged transversely from lateral margin towards suture. Legs brownish, most frequently with dark femora and often with tibiae darkened as well. Underside of body black, with particular parts lighter.



Figs. 671–680. *Coccinula quatuordecimpustulata sinensis* (Ws.). 671 — outline and pattern of body; 672 — last sternite of male; 673 — last sternite of female; 674–675 — male genitalia; 676 — siphon; 677 — apex of siphon; 678 — end of the trabes, ventral view; 679 — genital plate; 680 — receptaculum seminis.

Punctures on head small, closely arranged, areas with microsculpture fairly distinct, but shallow, reticulate. Punctures on pronotum small, sparsely arranged, areas with microsculpture very feebly marked. Punctures on elytra quite big, deep and closely arranged, slightly varying in respect of size, areas smooth.

Anterior margin of pronotum straight. Anterior angles feebly marked, slightly produced anteriorly. Posterior angles broadly rounded, hidden a little under elytra. Lateral margins feebly arcuate. Lateral reflexion of pronotal sides very narrow. Humeral tubercles feebly marked, situated closer to anterior margin than to lateral one. Lateral ridge of elytra reaching to apex of elytra. Femoral line fused with posterior margin, its branch is short, not connected with the main branch of femoral line. Last sternite in male (Fig. 672) short, markedly notched at posterior margin. Last sternite in female (Fig. 673) short, posterior margin at mid-width somewhat inflexed, basal processes very narrow and short. Spiculum gastrale bifurcate at base, 0.65 mm long.

Length 3.5–4.5 mm.

Male genitalia as in Figs. 674–675. Penis longer than parameres, in lateral

http://rcin.org.pl

view at apex elongate, slightly curved towards parameres, apex acuminate, in ventral view at apex rounded. Penis 0.45 mm long, 0.1 mm wide in lateral view, 0.1 mm wide in ventral view. Trabes very broad with end bifurcate (Fig. 678). Siphon (Fig. 676) curved at one-third from base, process on siphonal sack very small. Apex of siphon as in Fig. 677.

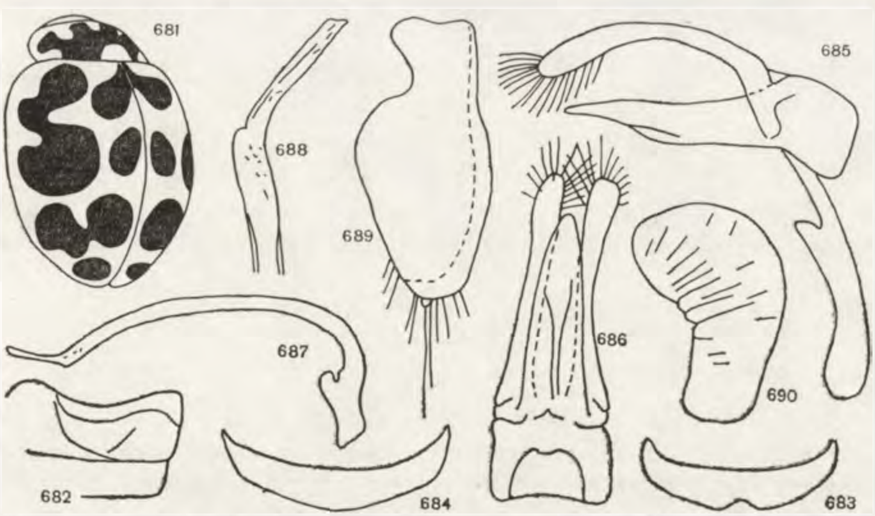
Female genitalia. Genital plates (Fig. 679) arranged obliquely. Base broad, curved. Sexual calli big. The greatest width at one-third from apex. Genital plate 0.3 mm long, 0.15 mm wide. Receptaculum seminis (Fig. 680) with a small nodulus, striae on its surface not very numerous and feebly marked.

In Mongolia the species is recorded quite frequently and in great numbers. It was found in various habitats, mostly on *Caragana*. Once it was taken from cultivated plants and from weeds in the fields.

Coccinula elegantula Ws.

The species has been reported from Mongolia several times under its proper name and, by mistake, under the name *C. redemita principalis* (Ws.).

Body strongly convex of almost semicircular shape. Head yellowish with a brownish base or brownish spots. Pronotum yellowish with 6 or 7 brownish spots which are sometimes interconnected. Scutellum brownish or brownish-black. Elytra yellowish with 9 brownish or brownish-black spots (Fig. 681) on each and frequently with a very small spot at scutellum. Elytral suture black. Spots situated in the anterior half of elytra at lateral margin and in the middle are most frequently confluent; no specimens with spots not confluent have been recorded in Mongolia. Legs brownish-yellow, often with femora of the hind pair slightly darkened. Underside of body black, only metatarsal



Figs. 681–690. *Coccinula elegantula* (Ws.). 681 — outline and pattern of body; 682 — femoral line; 683 — last sternite of male; 684 — last sternite of female; 685–686 — male genitalia; 687 — siphon; 688 — apex of siphon; 689 — genital plate; 690 — receptaculum seminis.

http://rcin.org.pl

process, meso- and metasternal epimera, metasternal episterna and borders of abdominal segments, white.

Punctures on head small, sparse, areas with distinct irregular microsculpture. Pronotal punctures very small, sparsely arranged, areas with microsculpture feebly marked, very shallow, irregular. Elytral punctures of medium size, distributed moderately, areas smooth.

Anterior margin of pronotum slightly arcuate, anterior angles faintly rounded, produced anteriorly, posterior ones broadly rounded. Lateral margin evenly arcuate. Lateral reflexion of pronotum narrow yet distinct. Humeral tubercles big, feebly marked, situated closer to anterior margin than to lateral one. Lateral ridge of elytra reaching to their apex. Arch of femoral line (Fig. 682) reaching to posterior margin, side branch long, not connected with the main branch. Last sternite in male (Fig. 683) short, notched on posterior margin. Last sternite in female (Fig. 684) short, with apices acuminate. Spiculum gastrale bifurcate at base, 0.42 mm long.

Length 2.5–3.3 mm.

Male genitalia as in Figs. 685–686. Penis shorter than parameres, when viewed laterally with apex narrowed and slightly curved, when viewed from below with apex rounded. Penis 0.28 mm long, 0.07 mm wide in lateral view, 0.08 mm wide in ventral view. Parameres strongly arcuate. Siphon (Fig. 687) curved at one-third from base. Apex of siphon as in Fig. 688.

Female genitalia. Genital plates (Fig. 689) arranged obliquely, base broad an short, the greatest width at mid-length. Sexual calli small. Genital plate 0.23 mm long, 0.12 mm wide. Receptaculum seminis as in Fig. 690.

The species was collected mainly on *Tamarix*.

Harmonia MULS.

Species that are included here are most frequently of light colouration with black spots, but there also are some forms with black ground and light spots. Antennae almost once and a half longer than the width of frons. Base of elytra markedly wider than that of pronotum. Prosternal process without costae. Femoral line very indistinct. Mesosternal epimera and metasternal episterna and also frequently the whole prosternum and mesosternum whitish. Claws with a small tooth at base.

So far only one species has been recorded from Mongolia.

Harmonia axyridis (PALL.)

The territory of this species comprises eastern Asia. The species is variable in its colouration and in this respect there are distinguished mainly four groups of colouration which until recently were considered to be subspecies. Particular types of colouration dominate in different parts of the territory of the species (DOBZHANSKY 1924), but they also occur simultaneously within the same po-

http://rcin.org.pl



Figs. 691–700. *Harmonia axyridis* (PAL.). Pattern of the elytra.



Figs. 701–710. *Harmonia axyridis* (PAL.). 701 – outline and pattern of body; 702 – last sternite of male; 703 – last sternite of female; 704–705 – male genitalia; 706 – apex of penis, ventral view; 707 – siphon; 708 – apex of siphon; 709 – genital plate; 710 – receptaculum seminis.

http://rcin.org.pl

pulation and therefore they should be considered ranges of individual variability. Thus, these variability groups are not regarded as subspecies (Sasaji 1971). In Mongolia there have been recorded three groups of colouration: axyridis, novemdecimsignata and spectabilis.

Body moderately convex of almost circular shape, slightly elongate posteriorly. Head yellowish or black with a yellow spot at middle, or entirely black. Pronotum yellowish with a big black spot at middle, the spot may be notched from front and then it resembles the letter M. Scutellum black or brownish. Elytra brownish or brownish-yellow with black spots (Fig. 701) situated separately, often obliterating or strongly enlarging and interconnected (Fig. 691–698). Elytra may also be entirely black with two or one brownish or reddish spot (Fig. 699–700). Legs may be brownish, darkened or black. Underside of body brownish, frequently darkened or black.

Punctures on head small, shallow, sparsely arranged, areas with distinct microsculpture. Punctures on pronotum small, arranged very sparsely, areas with indistinct microsculpture. Punctures on elytra of medium size, slightly varied in respect of size, arranged not very sparsely, shallow, areas with feebly marked traces of microsculpture.

Anterior margin of pronotum slightly curved anteriorly. Anterior angles rounded, faintly produced anteriorly. Posterior angles broadly rounded. Lateral margins evenly arcuate. Sides slightly reflexed. Humeral tubercles large, produced and situated a little closer to anterior margin than to lateral one. Lateral reflexion of elytra fairly wide, not reaching to elytral apex. In the posterior part of elytra sometimes a transverse fold. Last sternite in male (Fig. 702) short, with posterior margin notched. Last sternite in female (Fig. 703) at mid-width slightly widened, on the inner side thickened, basal processes very small.

Length to 8 mm.

Male genitalia as in Figs. 704–705. Penis as long as parameres, when viewed laterally at apex narrow and strongly curved towards parameres, when viewed from below narrow, just before the apex (Fig. 706) slightly widened towards sides. Penis 0.95 mm long, 0.25 mm wide in lateral view, 0.24 mm wide in ventral view. Siphon (Fig. 707) massive, strongly curved, apex as in Fig. 708.

Female genitalia. Genital plates (Fig. 709) narrowing towards apex, base broad and notched. Genital plate 0.75 mm long, 0.31 mm wide. Receptaculum seminis (Fig. 710) bent at mid-length, with an elongate nodulus.

The species is fairly common in Mongolia. It lives on various bushes and is particularly numerous on willows.

Synharmonia Ganglb.

Species that belong here are of medium size, variously coloured. Antennae a little longer than the width of frons. Frontal processes narrow and fairly

http://rcin.org.pl

long. Elytra slightly wider than base of pronotum. Prosternal process with costae not reaching to anterior margin. Metasternal episterna and epimera black. Femoral line incomplete, with a side branch (bifurcate). Claws with a tooth at base.

In Mongolia there have been recorded two species and one of these forms two subspecies.

Synharmonia conglobata conglobata (L.)

This subspecies occurs from Europe to Mongolia, with the exception of the southern part of Asia where it is replaced by another subspecies. Most probably the subspecies has migrated into Mongolia from the north and it has been recorded only in Töv aimak (Fig. 721).

Body compressed in the form of a broad, slightly elongate oval. Head yellow or pink with a black spot at base. Pronotum yellow or pinkish with 7 black spots and 4 of these are arranged in a semicircle in the middle of pronotum, one is at base in front of scutellum and two at sides. Base of pronotum between spots black. Scutellum black. Elytra pink with black suture and with 8 angular black spots on each (Fig. 711). Frequently, some spots are interconnected or connected with the black suture. Legs brownish. Underside of body black, mesosternal epimera white.

Punctures on head of medium size, arranged moderately sparse, areas with distinct reticulate microsculpture. Punctures on pronotum small, arranged very sparsely, areas with microsculpture shallow, feebly marked, reticulate. Puncturation of elytra consists of big and of slightly smaller punctures arranged fairly closely, areas smooth.

Anterior margin of pronotum straight. Anterior angles faintly rounded, produced anteriorly. Posterior angles broadly rounded. Lateral margins evenly arcuate. Sides of pronotum evenly but narrowly reflexed. Humeral tubercles large, distinct, at the same interval from lateral and anterior margins. Lateral reflexion of elytra distinct, narrow, reaching to elytral apex. Last sternite in male (Fig. 713) quite long, broadly notched on posterior margin. Last sternite in female very short, with apices acuminate, short.

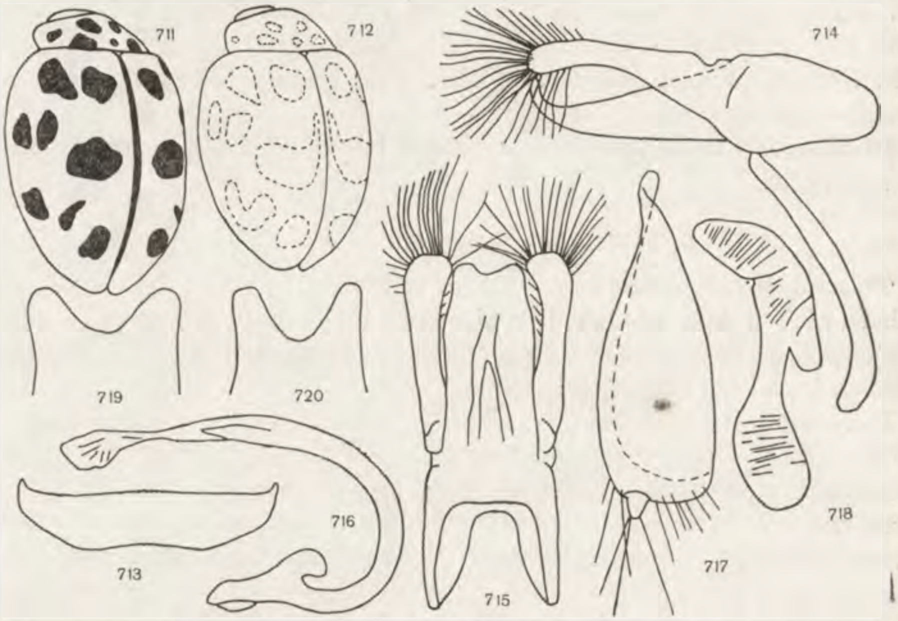
Length 4.8–5.2 mm.

Male genitalia as in Figs. 714–715. Penis as long as parameres, when viewed laterally at apex evenly curved towards parameres, when viewed from below notched at apex (Fig. 719). The ratio between the width and the depth of the notch is 3.1:1. Penis 0.53 mm long, 0.2 mm wide at base in lateral view, 0.25 mm wide in ventral view. Siphon (Fig. 716) massive, in posterior part strongly curved, with apex videned fanwise.

Female genitalia. Genital plates (Fig. 717) widening from base to apex, base twisted. Sexual calli big. Genital plate 0.4 mm long, 0.14 mm wide. Receptaculum seminis as in Fig. 718.

Only one specimen has been collected in Mongolia.

http://rcin.org.pl



Figs. 711–720. 711 and 713–719 — *Synharmonia conglobata conglobata* (L.); 712 and 720 — *Synharmonia conglobata buphthalmus* (Muls.); 711–712 — outline and pattern of body; 713 — last sternite of male; 714–715 — male genitalia; 716 — siphon; 717 — genital plate; 718 — receptaculum seminis; 719–720 — apex of penis, ventral view.

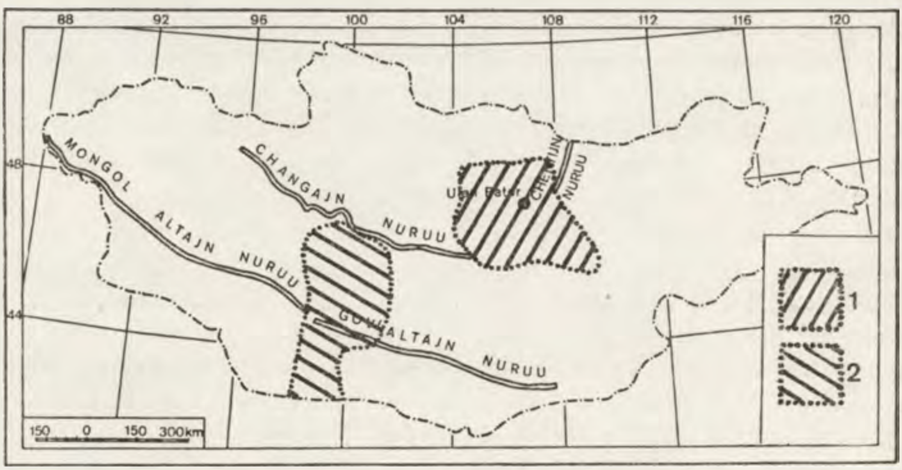


Fig. 721. Distribution in Mongolia. 1 — *Synharmonia conglobata conglobata* (L.); 2 — *Synharmonia conglobata buphthalmus* (Muls.).

http://rcin.org.pl

Synharmonia conglobata buphthalmus (Muls.)

This subspecies occurs in Central Asia, Afghanistan, Tibet and Mongolia. Most probably it first entered Mongolia from the southern-west. In Mongolia reported only from Bayankhongor aimak (Fig. 721).

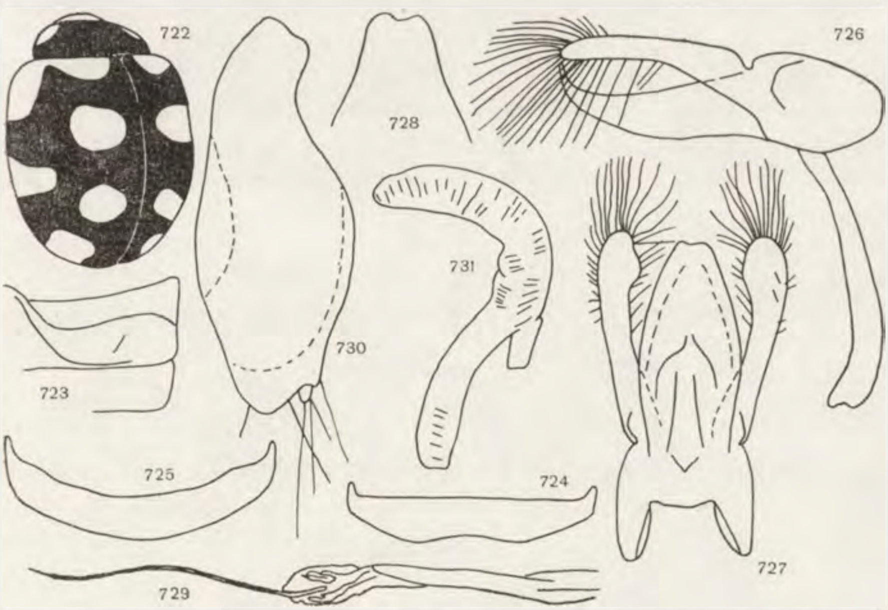
The subspecies differs from *S. conglobata conglobata* by a shorter body, brownish spots on pronotum and on elytra (Fig. 712), by a more slender penis and by a deeper notch at its apex (Fig. 720). The ratio between width and depth of the notch at the apex of penis is 1.8:1.

The subspecies is connected with semidesert or desert habitats. In Mongolia it was collected on *Tamarix*.

Synharmonia oncina (Oliv.)

The species occurs in south-eastern Europe and extends to Central and eastern Asia. The sites in Mongolia are the easternmost.

Body moderately convex of almost circular shape. Head yellowish in male, black in female. Pronotum black with anterior margin and anterior angles yellowish in male, in female only angles of pronotum are yellowish. Scutellum black. Elytra black with 6 yellowish or testaceous spots on each (Fig. 722). Three spots are situated at suture and three at lateral margin. Lateral spots



Figs. 722–731. *Synharmonia oncina* (Ol.). 722 — outline and pattern of body; 723 — femoral line; 724 — last sternite of male; 725 — last sternite of female; 726–727 — male genitalia; 728 — apex of penis, ventral view; 729 — apex of siphon; 730 — genital plate; 731 — receptaculum seminis.

http://rcin.org.pl

are not interconnected. Legs brownish. Underside of body black, mesosternal epimera white. Epipleura of elytra light.

Punctures on head small, arranged very sparsely, areas with shallow, faintly marked, reticulate microsculpture. Punctures on pronotum small, slightly bigger than those on head, arranged very sparsely, areas with very shallow, reticulate microsculpture. Punctures on elytra small, shallow and sparsely arragned, areas with irregular, occasionally interconnected, dashes.

Anterior margin of pronotum straight. Anterior angles faintly rounded, almost straight, feebly produced anteriorly. Posterior margins broadly rounded. Lateral margins very faintly arcuate. Reflexion of the sides of pronotum marked faintly only in anterior half. Humeral tubercles marked very faintly and situated close to anterior margin. Lateral reflexion of elytra very narrow and not reaching to elytral apex. Femoral line as in Fig. 723. Last sternite in male (Fig. 724) short, with posterior margin notched. Last sternite in female (Fig. 725) strongly arcuate, with apices short and acute.

Length 3–4 mm.

Male genitalia as in Figs. 726–727. Penis as long as parameres, in lateral view strongly curved towards parameres, when viewed from below it is the widest at mid-length, apex obtuse and faintly notched (Fig. 728). Penis 0.57 mm long, 0.18 mm wide in lateral view, 0.25 mm wide in ventral view. Siphon fairly slender, broad, semicircular in posterior half, apex as in Fig. 729.

Female genitalia. Genital plates (Fig. 730) strongly elongate with a broad base. Genital plate 0.39 mm long, 0.16 mm wide. Receptaculum seminis as in Fig. 731.

In external appearance the species resembles *Coccinella quatuordecimpustulata sinensis* (Ws.), but it is easily distinguished by the number of spots on the sides of elytra. *S. oncina* is similar also to *S. hirayamai* Yuasa — a species occurring in Japan and to *S. bisexnotata* (Muls.) occurring in the Far East (Korea, China).

In Mongolia the species lives most probably on *Tamarix*.

Myrrha Muls.

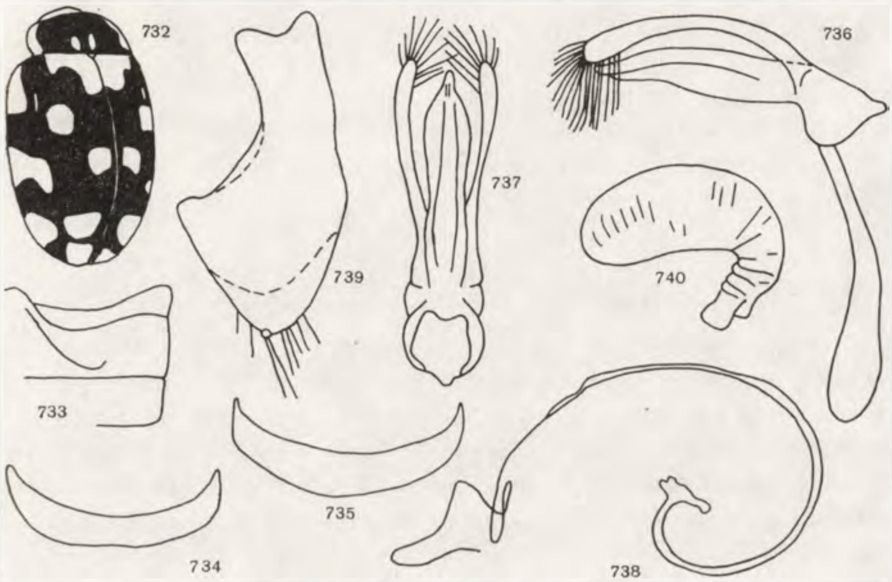
The genus includes only one species. Antennae slender, with joints strongly elongate, last joint also elongate, oval. Prosternal process with costae. On the first abdominal segment the femoral line reaches to three-fourths of length and bends there angularly. Claws with a tooth at base. Meso- and metasternal epimera and metasternal episterna, white.

Myrrha octodecimguttata (L.)

The species is distributed from Europe to Mongolia, it has never been recorded further to the east. From Mongolia it has been reported only once.

http://rcin.org.pl

Body depressed in the form of an elongate oval. Head rufous, occasionally with two slightly lighter spots at eyes. Pronotum brownish-reddish with whitish anterior angles and with two whitish spots in front of scutellum. The whitish colour of anterior angles may cover the sides and reach to posterior angles. Elytra rufous or sometimes brownish-black with light yellow angular spots (Fig. 732), each elytron with 8 or 9 spots. Most frequently, the spots are interconnected in various ways forming something like a chess-board. The spots are often hardly distinguishable from the ground. Legs brownish. Underside of body dark brownish, frequently the central part is darkened.



Figs. 732–740. *Myrrha octodecimguttata* (L.). 732 — outline and pattern of body; 733 — femoral line; 734 — last sternite of male; 735 — last sternite of female; 736–737 — male genitalia; 738 — siphon; 739 — genital plate; 740 — receptaculum seminis.

Punctures on head big, shallow, arranged very sparsely, areas with distinct, reticulate microsculpture. Punctures on pronotum not very big, deep, sparsely arranged, areas between them with microsculpture in the form of reticule, often with mesh broken. Puncturation of elytra very slightly differentiated into big and slightly smaller punctures, punctures deep and closely arranged, areas with very infrequent, irregular dashes.

Anterior margin of pronotum straight. Anterior and posterior angles broadly rounded, anterior ones not produced anteriorly. Lateral margins evenly arcuate. Sides reflexed distinctly. Humeral tubercles big, strongly produced, situated near humeral angles. Lateral reflexion of elytra narrow and extending almost to the apex of elytra. Femoral line as in Fig. 733. Last sternite in male (Fig. 734) short, with posterior margin very slightly notched. Last sternite

http://rcin.org.pl

in female (Fig. 735) with posterior margin feebly arcuate. Spiculum gastrale narrow, long, not widened at apices, 1 mm long.

Length 3.8–5 mm.

Male genitalia as in Figs. 736–737. Penis almost as long as parameres, in lateral view slightly curved at apex, when viewed from below narrowed at mid-length and slightly widened before apex. Penis 0.7 mm long, 0.16 mm wide in lateral view, 0.15 mm wide in ventral view. Siphon (Fig. 738) very long, slender, reflexed almost circularly, with a long flagellum at apex.

Female genitalia. Genital plates (Fig. 739) with base wide, long and notched, lateral notch very big. Pubescence poor and short, sexual callus small. Genital plate 0.45 mm long, 0.25 mm wide. Receptaculum seminis (Fig. 740) with cornu somewhat swollen, nodulus small. Surface of cornu with fine, infrequent striae.

In principle, Mongolian specimens were not different from European ones. They were collected in cultivated fields, by sweeping. In Europe the species lives on coniferous trees, mainly on pines.

Calvia Muls.

Species that belong here are fairly big, of convex body. Colouration of the body most frequently light with whitish spots or with a white pattern; in one species the spots are black. Last antennal joint straightly truncate at apex. Costae on prosternal process not very distinct. Claws with a tooth at base. Femoral line incomplete. This genus comprises fairly numerous species that occur mainly in Asia. Four species have been recorded from Mongolia.

Calvia duodecimmaculata (Gebl.)

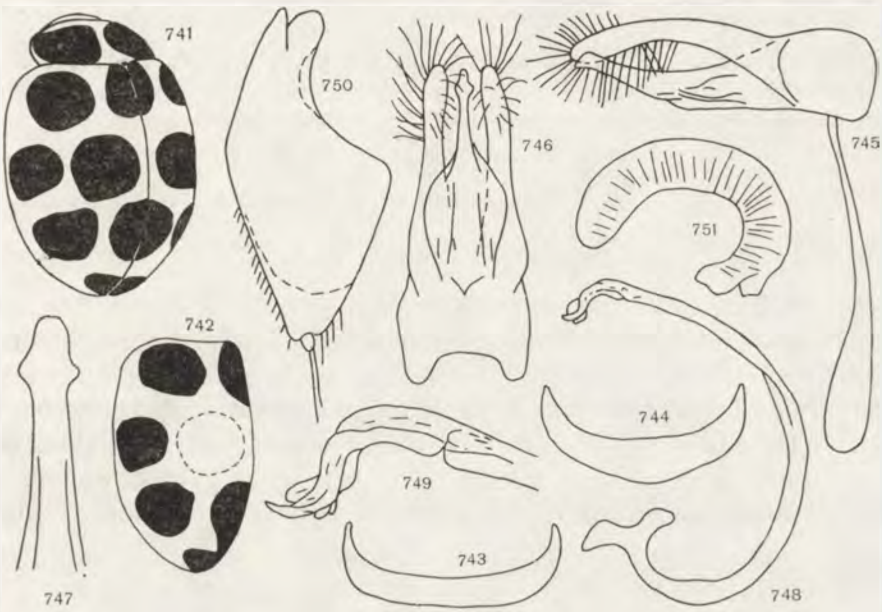
The species occurs in Transbaicalia and Mongolia, so far it has not been recorded from Korea. In Japan and North America it forms separate geographical races.

Body moderately convex in the form of a short oval. Head usually black with yellow sides. Pronotum yellow-brownish or orange with a pair of almost square, big black spots reaching to pronotal base. Scutellum black with anterior margin yellowish. Elytra yellow-brownish or yellow-reddish with 7 black spots on each (Fig. 741). Scutellar spots and those situated at suture in posterior half forming common spots with the opposite ones. Apical spot reaches to suture. Subhumeral spot seldom reaching to almost the very margin. Evanescence of central spot occurs frequently (Fig. 742). All the spots are usually big and of almost circular shape. Legs brownish with strongly darkened femora. Underside of body dark brownish or black, abdominal segments lighter.

Punctures on head deep, sparsely arranged, areas between them with distinct reticulate microsculpture. Punctures on pronotum of size similar to

http://rcin.org.pl

those on head, closely arranged, areas smooth. Puncturation on elytra consisting of big and slightly smaller punctures, punctures arranged very closely, areas smooth.



Figs. 741–751. *Calvia duodecimmaculata* (Gebl.). 741 — outline and pattern of body; 742 — pattern of elytra; 743 — last sternite of male; 744 — last sternite of female; 745–746 — male genitalia; 747 — apex of penis, ventral view; 748 — siphon; 749 — apex of siphon; 750 — genital plate; 751 — receptaculum seminis.

Anterior margin of pronotum arcuate. Anterior angles faintly rounded, produced anteriorly. Posterior angles broadly rounded. Lateral margins evenly arcuate. Sides of pronotum reflexed. Humeral tubercles big, strongly produced, at the same distance from anterior and lateral margins. Lateral reflexion of elytra fairly wide and reaching almost to the end of elytra. Arch of femoral line reaching to posterior margin, running along it towards lateral margin and terminating close to it. Last sternite in male (Fig. 743) with apices elongate, narrow and slightly curved, posterior margin curved very feebly. Last sternite in female (Fig. 744) curved quite strongly. Spiculum gastrale 0.88 mm long.

Length 5–6 mm.

Male genitalia as in Figs. 745–746. Penis as long as parameres, in lateral view almost from mid-length slightly bent towards parameres, when viewed from below with basal part very broad and with apical part narrow and elongate, before apex slightly widened laterally and apex elongate again beyond the widening (Fig. 747). Penis 0.7 mm long, 0.2 mm wide in lateral view, 0.26 mm wide in ventral view. Siphon (Fig. 748) strongly curved, quite massive. Apex of siphon as in Fig. 749.

http://rcin.org.pl

Female genitalia. Genital plates (Fig. 750) widest at mid-length, getting narrower towards apex. Base short, bifurcate. Genital plate 0.58 mm long, 0.26 mm wide. Receptaculum seminis (Fig. 751) fairly wide, bent semicircularly, numerous striae on cornu.

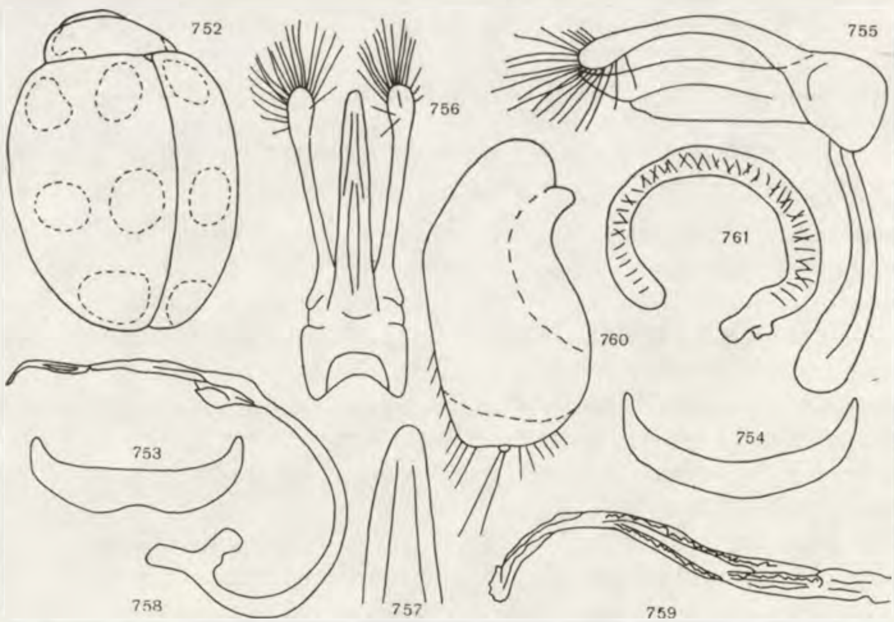
In external appearance the species is easily distinguishable from others. In the structure of both male and female genitalia it is very similar to *C. quatuordecimguttata*, but the apex of penis beyond the widening is elongate in *C. duodecimmaculata* and very short in *C. quatuordecimguttata*.

The species was collected in various habitats and lives probably both on deciduous as on coniferous trees.

Calvia decemguttata (L.)

The territory of this species extends from Europe to Japan. The species has also been recorded from China. From Mongolia it has been found only once.

Body quite strongly convex, in the shape of a broad oval. The whole body yellowish or light brownish with lighter spots. On pronotum the lighter colour occurs on sides. Each elytron with 5 fairly big, light, almost whitish spots (Fig. 752) arranged according to the pattern 2–2–1. Legs brownish. Underside



Figs. 752–761. *Calvia decemguttata* (L.). 752 – outline and pattern of body; 753 – last sternite of male; 754 – last sternite of female; 755–756 – male genitalia; 757 – apex of penis, ventral view; 758 – siphon; 759 – apex of siphon; 760 – genital plate; 761 – receptaculum seminis.

http://rcin.org.pl

of body light brownish, lighter on sides, mesosternal episterna and metasternal epimera white.

Punctures on head quite big, sparsely arranged, areas with reticulate microsculpture. Punctures on pronotum smaller than those on head, arranged very sparsely, areas with reticulate microsculpture. Punctures on elytra slightly bigger than on pronotum, arranged markedly more closely, areas almost smooth, with only traces of microsculpture.

Anterior angles of pronotum broadly rounded, markedly produced anteriorly. Anterior margin of pronotum straight. Lateral margins feebly arcuate. Lateral reflexion of pronotum distinct only in anterior half. Lateral reflexion of elytra broad. Humeral tubercles quite big, clearly closer to anterior margin than to lateral one. Arch of femoral line reaching close to posterior margin and the line later running parallel to it, terminating quite far from lateral margin. Last sternite in male (Fig. 753) with posterior margin strongly notched. In female last sternite (Fig. 754) strongly curved. Spiculum gastrale 1.45 mm long.

Length 5–6.5 mm.

Male genitalia as in Figs. 755–756. Penis as long as parameres, in lateral view fairly wide, with apex slightly bent into a short point, when viewed from below narrow, apex broadly rounded (Fig. 757). Penis 1.05 mm long. 0.27 mm wide in lateral view, 0.15 mm wide in ventral view. Siphon (Fig. 758) very long with siphonal sack big and elongate. Apex of siphon as in Fig. 759.

Female genitalia. Genital plates (Fig. 760) wide with base almost indistinguishable. Sexual calli small. Genital plate 0.6 mm long, 0.3 mm wide. Receptaculum seminis (Fig. 761) bent almost circularly, with a very small nodulus.

In the structure of male genitalia the species is most similar to *C. quindecimguttata*, but it is easily distinguished by the number of spots on elytra.

C. decemguttata, just as other species belonging to this genus, most probably lives on decidous trees, as in Europe.

Calvia quindecimguttata (F.)

The species occurs from Europe to China and Japan. From Mongolia it was recorded once in 1923. In recent material the species is absent.

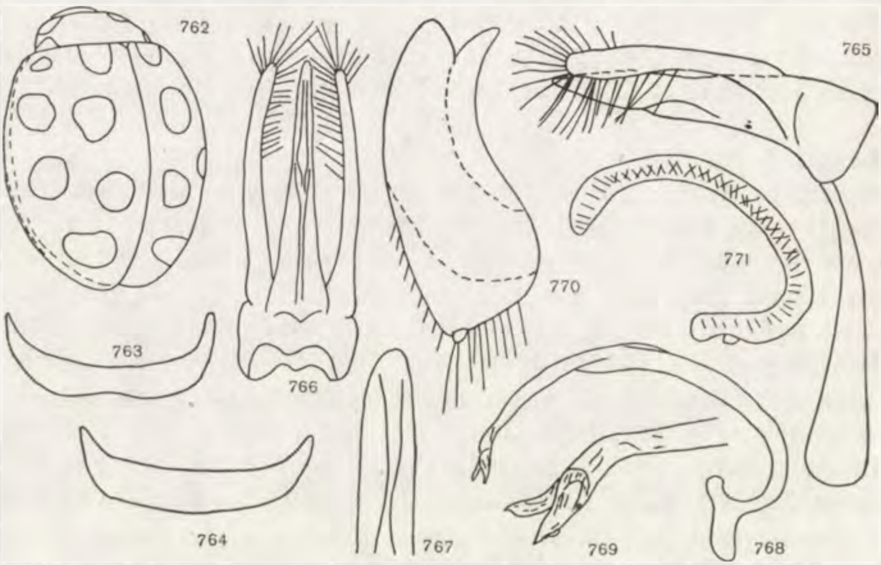
Body quite strongly convex, very wide, almost circular. Head yellowish-testaceous. Pronotum yellowish-testaceous with whitish spots of indistinct shapes situated in the anterior and posterior angles and in the middle near base. Scutellum yellowish-testaceous. Elytra yellowish-testaceous, each with 6 distinct whitish spots (Fig. 762) arranged according to the pattern 1–2–2–1. Lateral margin of elytra frequently whitish and often there is a small, irregular, whitish spot in humeral angles. Underside of body yellow-brownish.

Punctures on head big, sparsely arranged, areas with reticulate microsculpture. Punctures on pronotum small, sparsely arranged, areas smooth. Punctu-

http://rcin.org.pl

res on elytra quite big, arranged not very closely, areas with a few irregular, very fine dashes.

Anterior margin of pronotum slightly arcuate. Anterior angles broadly rounded, faintly produced anteriorly. Posterior angles broadly rounded. Lateral margins evenly arcuate. Lateral reflexion of pronotum narrow but distinct. Humeral tubercle big, produced, situated a little closer to anterior margin than to lateral one. Lateral reflexion of elytra wide, slightly widened immediately before mid-length, reaching to elytral apex. Arch of femoral line close to posterior margin and parallel to it over a short distance. Last sternite in male (Fig. 763) with posterior margin slightly notched. Last sternite in female (Fig. 764) faintly curved. Spiculum gastrale very long – 1.1 mm.



Figs. 762–771. *Calvia quindecimguttata* (F.). 762 – outline and pattern of body; 763 – last sternite of male; 764 – last sternite of female; 765–766 – male genitalia; 767 – apex of penis, ventral view; 768 – siphon; 769 – apex of siphon; 770 – genital plate; 771 – receptaculum seminis.

Length 5–6 mm.

Male genitalia as in Figs. 765–766. Penis slightly longer than parameres, in lateral view straight, when viewed from below very narrow and not widened before apex (Fig. 767). Penis 0.86 mm long, 0.17 mm wide in lateral view, in ventral view 0.08 mm wide at mid-length. Siphon (Fig. 768) massive, curved, its apex as in Fig. 769.

Female genitalia. Genital plates (Fig. 770) quite narrow, slightly sigmoid, the greatest width near apex, base wide, bifurcate. Genital plates 0.65 mm long, 0.27 mm wide. Receptaculum semimis (Fig. 771) very slender and very long, strongly curved, surface with numerous striae.

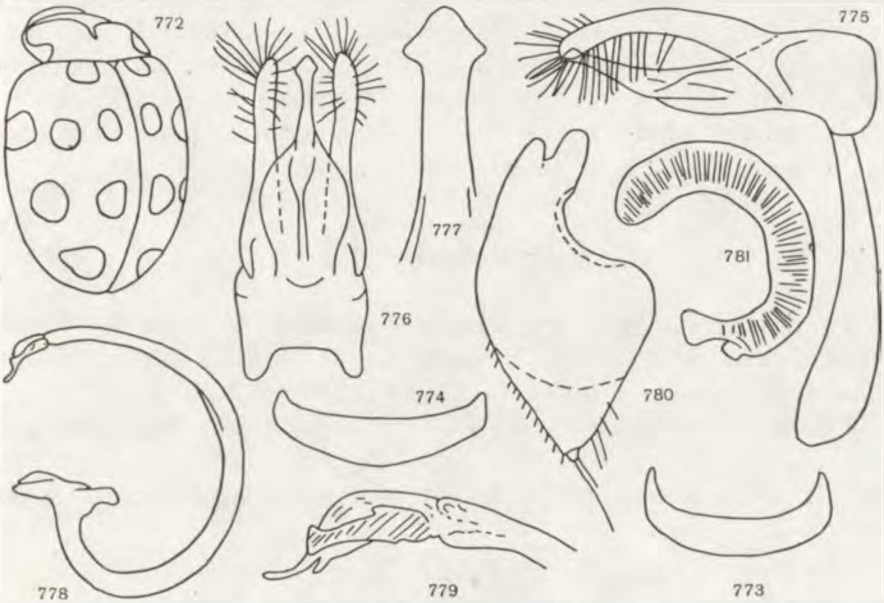
The species probably lives on birches.

http://rcin.org.pl

Calvia quatuordecimguttata (L.)

The species is distributed very widely from Europe to Japan; it also occurs in North America. From Mongolia it has been recorded only once.

Body quite strongly convex in the shape of a broad oval. Head yellow-brownish. Pronotum brownish-yellow with a whitish spot in posterior angles, frequently lateral margin, anterior angles and middle of pronotum also whitish. Scutellum brownish-yellow with darker margins. Elytra brownish-yellow with 7 distinct whitish-yellow spots (Fig. 772) on each arranged according to the following pattern 1–3–2–1. Legs brownish. Underside of body brownish with a darker metasternum.



Figs. 772–781. *Calvia quatuordecimguttata* (L.). 772 — outline and pattern of body; 773 — last sternite of male; 774 — last sternite of female; 775–776 — male genitalia; 777 — apex of penis, ventral view; 778 — siphon; 779 — apex of siphon; 780 — genital plate; 781 — receptaculum seminis.

Punctures on head quite big, deep, closely arranged, areas between them with distinct, reticulate mircosculpture. Punctures on pronotum smaller than those on head, closely arranged, areas with a few as if scratches. Puncturation on elytra consists of big and smaller punctures, but the difference is not very big, punctures are arranged closely, areas are smooth.

Anterior margin of pronotum slightly curved. Anterior angles faintly rounded, produced anteriorly. Posterior angles broadly rounded. Lateral margins evenly arcuate. Sides markedly reflexed. Humeral tubercles big, strongly produced, at the same distance from anterior and lateral margins. Lateral reflexion of elytra not very wide, almost the same along the whole length, but not

http://rcin.org.pl

reaching to apex of elytra. Arch of femoral line reaching to margin of posterior segment and the line virtually terminating there. Last sternite in male (Fig. 773) curved quite strongly, with apices narrow and elongate. Last sternite in female (Fig. 774) faintly curved, with apices very short. Spiculum gastrale 0.85 mm long.

Length 4.5–6 mm.

Male genitalia as in Figs. 775–776. Penis as long as parameres, in lateral view slightly curved towards parameres, when viewed from below towards apex slightly widened laterally, apex beyond the widening very short (Fig. 777). Penis 0.7 mm long, 0.17 mm wide in lateral view, 0.28 mm wide in ventral view. Siphon (Fig. 778) strongly curved, massive, its apex as in Fig. 779.

Female genitalia. Genital plates (Fig. 780) fairly wide, in front of base strongly notched and growing narrow towards apex. Genital plate 0.54 mm long, 0.3 mm wide. Receptaculum seminis (Fig. 781) quite long, strongly curved, with very numerous and fine striae on cornu.

The species is related closer to *C. duodecimmaculata* than to *C. quindecimguttata;* it is more similar to the latter in its external appearance.

Propylaea Muls.

Body of medium size, somewhat depressed. Antennae short with the last joint diagonally rounded. Prosternal process with costae. Metasternal episterna almost entirely white. Claws with a tooth at base.

The genus includes two species which in eastern Asia occur together. One of them occurs in the east only, the other far towards the west extending to Europe. Only one species has been recorded from Mongolia and it is the one that occurs in Europe.

Propylaea quatuordecimpunctata (L.)

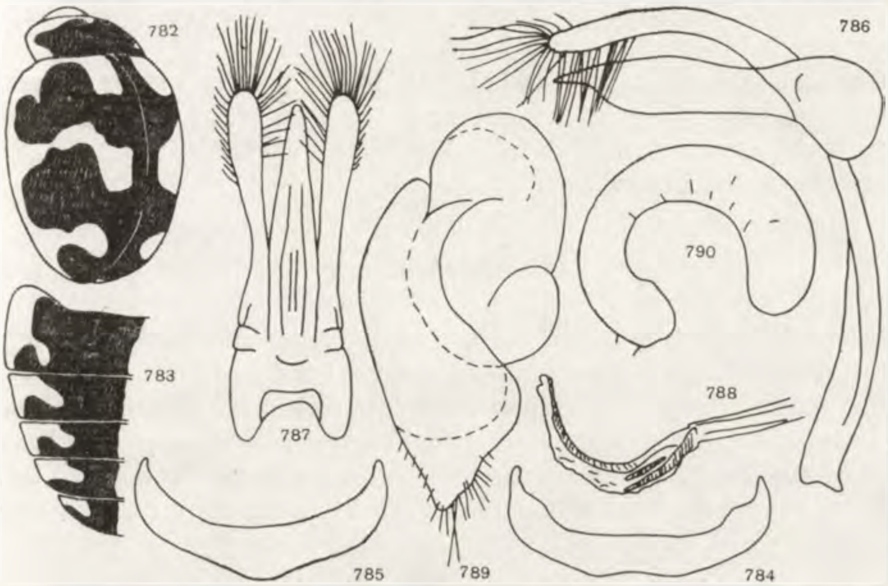
The species has been recorded from Mongolia many times and is very widely distributed from Europe to Japan.

Body faintly convex, a little depressed, in the shape of a very wide oval. Head yellow, often with a black spot at middle at clypeus. The size of the spot may vary. Pronotum yellow with a big black spot notched at front. Scutellum black. Elytra yellowish with black, angular, most frequently rectangular spots. The spots most often interconnected (Fig. 782) in various ways. Frequently they are confluent in such a way that elytra are black with yellow spots, but the lateral margins always remain yellow. Elytral suture in anterior half or the whole of it, black. Legs light with femora at tibiae darkened. Underside of body black, sides of abdominal segments yellowish and the colour forming as if processes towards the middle of segment (Fig. 783).

Punctures on head very small, shallow, sparsely arranged, areas with

http://rcin.org.pl

distinct reticulate microsculpture. Punctures on pronotum small, but slightly bigger than those on head, sparsely arranged, areas with faintly marked microsculpture in the form of irregular dashes, most often arranged transversely, interconnected and in some places forming something as if reticule. Punctures on elytra quite big, but of slightly varied size, closely arranged, areas virtually smooth.



Figs. 782–790. *Propylaea quatuordecimpunctata* (L.). 782 – outline and pattern of body; 783 – pattern of abdomen; 784 – last sternite of male; 785 – last sternite of female; 786–787 – male genitalia; 788 – apex of siphon; 789 – genital plate; 790 – receptaculum seminis.

Anterior margin of pronotum very faintly arcuate. Anterior angles slightly rounded, produced anteriorly. Posterior angles broadly rounded. Lateral margins of pronotum very feebly arcuate, the greatest at base. Pronotal sides distinctly yet narrowly reflexed. Humeral tubercle big, greatly produced, situated closer to anterior margin than to lateral ones. Lateral reflexion of elytra broad throughout the length, only before apex strongly narrowed. Femoral line incomplete, its arch reaching close to posterior margin, further on the line running parallel and terminating near lateral margin. In male last sternite (Fig. 784) short, with posterior margin notched. In female last sternite (Fig. 785) arched quite strongly, with apices acute, with posterior margin somewhat convex at mid-width.

Length 4–4.5 mm.

Male genitalia as in Figs. 786–787. Penis as long as parameres, 0.63 mm long, 0.16 mm wide in lateral view, 0.12 mm wide in ventral view. Siphon

http://rcin.org.pl

slender, in posterior part bent semicircularly, apex of siphon (Fig. 788) falciform.

Female genitalia. Genital plates (Fig. 789) sigmoid, with an extremely small sexual calli. Genital plate 0.51 mm long, 0.2 mm wide. Receptaculum seminis (Fig. 790) bent semicircularly, with nodulus not differentiated, surface almost smooth.

The species is very similar to *P. japonica* (Thnb.) but it differs from the other because of its darkened femora, the humeral spot on elytra very often divided and because of a wider body.

The species lives in various habitats, but it prefers wet or ruderal ones or various cultures. In greater numbers it has been found on nettles, willows, and on herbaceous plants that form brushwood at water. The species is not very frequent in Mongolia.

Neomysia Casey

Species belonging here are big with a characteristic pattern on elytra in form of elongate spots often forming oblong bandes. Clypeus with two not very big yet distinct processes inserted before antennae. Antennal joints elongate. Prosternal process without costae. Femoral line incomplete. Claws with a tooth at middle. In the Palearctic there occur three species and the territory of one of them is restricted to Japan only. In Mongolia there occur two species.

Neomysia oblongoguttata (L.)

The species occurs from Europe to Siberia, recently it has been recorded from Korea (Bielawski—in print) and from Mongolia.

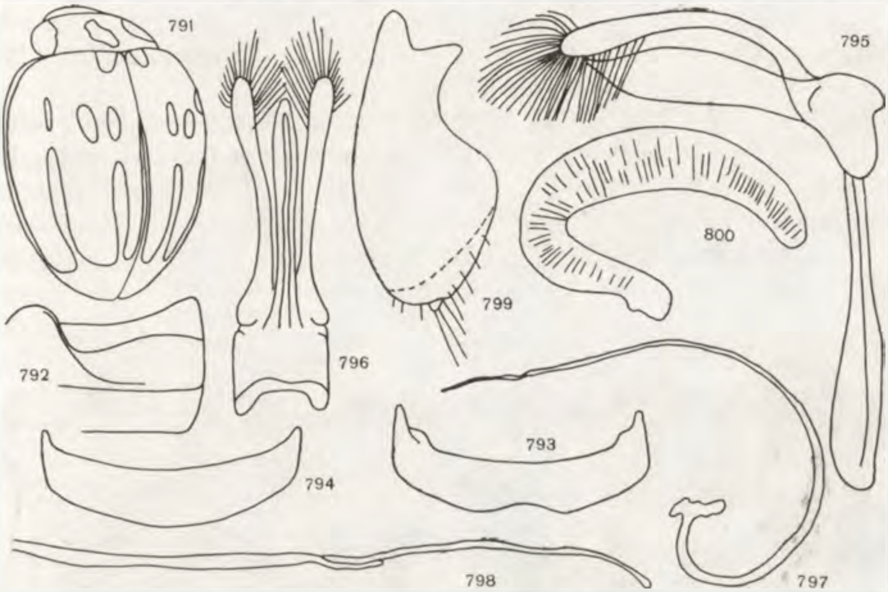
Body moderately convex in the shape of an oval fairly wide, but towards the posterior slightly elongate. Head yellowish, pronotum yellowish with a brownish or black spot at middle extending from anterior margin to base, borders of the spot slightly arcuate. Scutellum brownish. Elytra testaceous or brownish-yellow with 6–7 elongate, whitish spot (Fig. 791). The spots are often interconnected or some of them blend into the ground-colour and obliterate or are very indistinct. At the sides of scutellum always two distinct, light spots. Lateral margins and apex of elytra lighter than ground-colour. Side spot situated in the posterior half of elytra most often covers half of the length of elytra and frequently joins the subhumeral spot forming an oblong light band running over almost the whole length of elytra. Legs and underside of body dark brownish, only mesosternal epimera white.

Punctures on head big, shallow and arranged very sparsely, areas with shallow yet distinct reticulate microsculpture. Punctures on pronotum small, shallow, closely arranged, areas between them with distinct microsculpture in the form of a reticule with broken mesh. Punctures on elytra small, shallow,

http://rcin.org.pl

arranged more sparsely than those on pronotum, areas with distinct microsculpture similar to that on pronotum.

Anterior margin of pronotum almost straight. Anterior and posterior angles rounded, anterior ones not produced anteriorly. Lateral margin of pronotum evenly arcuate. Sides of pronotum broadly, but faintly reflexed. Humeral tubercle big, faintly produced, closer to anterior margin than to lateral one.



Figs. 791–800. *Neomysia oblongoguttata* (L.). 791 – outline and pattern of body; 792 – femoral line; 793 – last sternite of male; 794 – last sternite of female; 795–796 – male genitalia; 797 – siphon; 798 – apex of siphon; 799 – genital plate; 800 – receptaculum seminis.

Lateral reflexion of elytra quite wide, only in the posterior narrowing towards apex. Arch of femoral line (Fig. 792) reaching almost to posterior margin and the line terminating there. In male last sternite (Fig. 793) with posterior margin quite strongly notched. In female last sternite (Fig. 794) with posterior margin faintly arcuate, with apices very short and narrow.

Length of the specimen from Mongolia 8 mm.

Male genitalia as in Figs. 795–796. Penis shorter than parameres, in lateral view slightly arcuate, apex acuminately truncate, when viewed from below straight and very narrow. Penis 1.15 mm long, 0.27 mm wide in lateral view, 0.12 mm wide in ventral view. Siphon (Fig. 797) slender, from mid-length strongly bent semicirculary, with apex narrow and long (Fig. 798).

Female genitalia. The shape of genital plates (Fig. 799) pear-like, base notched. Genital plate 0.7 mm long, 0.35 mm wide. Receptaculum seminis (Fig. 800) strongly bent, with a very small nodulus.

In external appearance the species resembles *N. nipponica* Yuasa very

http://rcin.org.pl

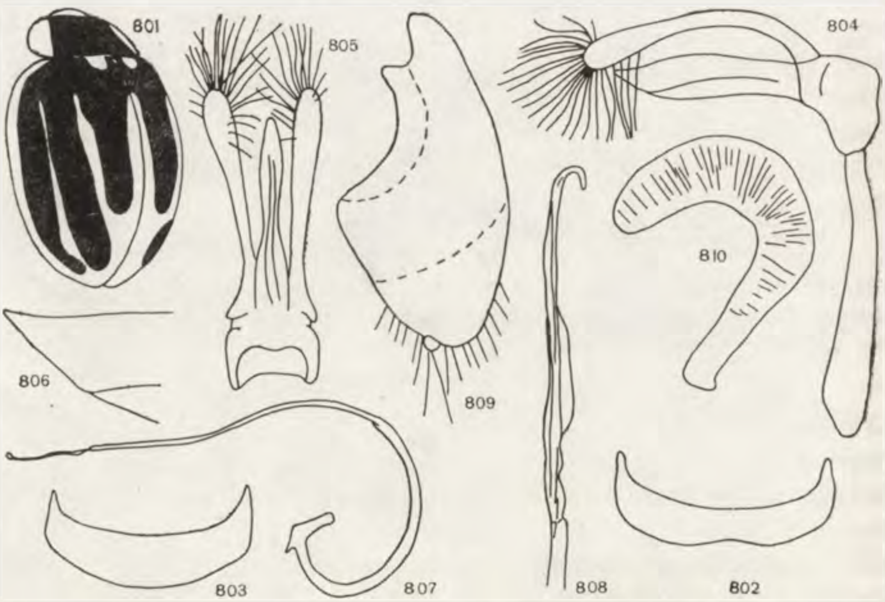
much – a species occurring only in Japan. In this species elytral spots are quite distinct, feebly elongate and situated separately, the shape of the body is more shorter.

Only one specimen found in an urban park, on hagberry.

Neomysia ramosa (FALD.)

The territory of the species comprises the eastern part of Asia and the species has so far been recorded from Japan, Siberia (Irkuck) and from Mongolia (SASAJI 1971, BIELAWSKI 1975).

Body faintly convex, in the form of a broad oval. Head black with yellowish spots at eyes. The size of the spots varies in particular specimens. Pronotum black with sides yellowish. Scutellum black. Elytra black with lateral margin, two spots at both sides of scutellum and three narrow, elongate bands connected before the apex with a light transverse band. Legs and underside of body black, mesosternal epimera white.



Figs. 801–810. *Neomysia ramosa* (FALD.). 801 – outline and pattern of body; 802 – last sternite of male; 803 – last sternite of female; 804–805 – male genitalia; 806 – apex of penis, lateral view; 807 – siphon; 808 – apex of siphon; 809 – genital plate; 810 – receptaculum seminis.

Punctures on head big, of similar size as those on elytra, closely arranged, areas between them with distinct reticulate mircosculpture. Punctures on pronotum small, arranged moderately, areas with distinct reticulate microsculpture. Punctures on elytra big, deep, closely arranged, areas with microsculpture in the form of irregular dashes partly interconnected.

http://rcin.org.pl

Anterior margin of pronotum straight. Anterior and posterior angles broadly rounded, anterior ones slightly produced anteriorly. Lateral margin of pronotum evenly arcuate. Sides of pronotum reflexed quite broadly. Humeral tubercle big, prominent, situated closer to anterior margin than to lateral one. Lateral reflexion of elytra narrow, reaching to elytral apex. Arch of femoral line reaching close to posterior margin, the line terminating there. In male last sternite (Fig. 802) with a faint notch on posterior margin and with fairly long terminal processes. Last sternite in female (Fig. 803) with posterior margin strongly arcuate. Spiculum gastrale 1.5 mm long.

Length 6–7.5 mm.

Male genitalia as in Figs. 804–805. Penis shorter than parameres, in lateral view narrow, slightly bent, apex in the form of a short, straight point (Fig. 806), when viewed from below very narrow and at mid-length slightly narrowing, apex a little narrowed, rounded. Penis 0.82 mm long, 0.2 mm wide in lateral view, 0.08 mm wide at mid-length in ventral view. Siphon (Fig. 807) big, very slender, with a small siphonal sack. Apex of siphon as in Fig. 808.

Female genitalia. Genital plates (Fig. 809) with a wide, divided base. Sexual calli very big. Genital plate 0.65 mm long, 0.35 mm wide. Receptaculum seminis (Fig. 810) with a strongly elongate nodulus.

The very characteristic pattern on elytra makes this species easily distinguishable from other species within the genus.

The species was collected in various habitats, the present writer collected it on larches.

Anatis Muls.

Species belonging here are considerably big and by presence of a hairy notch at the apex of elytra they are easily distinguished from others. Antennae long. Prosternal process without costae. Mesosternum notched in the middle of anterior margin. Femoral line incomplete. Mid- and posterior tibiae with two spikes. Claws with a tooth at base.

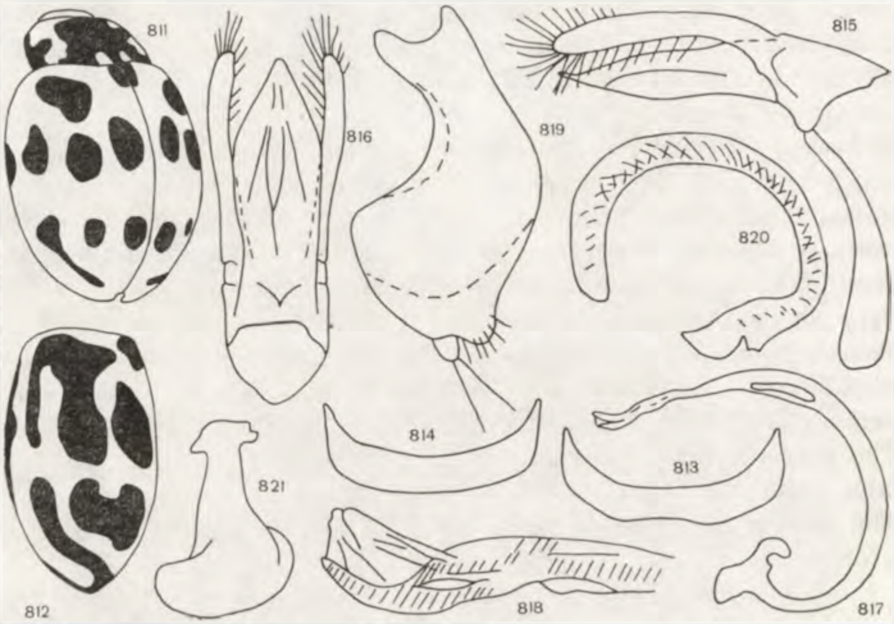
In the Palaearctic occur two species, one widely distributed and the other with its territory restricted to Sakhalin and Japan. Only one species occurs in Mongolia.

Anatis ocellata (L.)

Body slighty convex in the form of a broad oval. The greatest width of the body at mid-length. Head black with two light spots at eyes. Pronotum testaceous-yellow with a black pattern and posterior and lateral margins black. The black colouring frequenlty covers almost the entire surface of pronotum. Scutellum black. Elytra brownish. Elytral margins black. This colour widens opposite the spots situated near the margin and it sometimes blends into a respe-

http://rcin.org.pl

ctive spot. As a rule, each elytron with 9 black spots that are surrounded by a slightly lighter band (Fig. 811). The spots may obliterate or interconnect (Fig. 812). Legs black, only apices of tibiae and occasionally tarsi, lighter. Underside of body black, only mesosternal epimera and margins of abdominal segments, light.



Figs. 811–821. *Anatis ocellata* (L.). 811 — outline and pattern of body; 812 — pattern of elytra; 813 — last sternite of male; 814 — last sternite of female; 815–816 — male genitalia; 817 — siphon; 818 — apex of siphon; 819 — genital plate; 820 — receptaculum seminis; 821 — infundibulum.

Puncturation of head consisting of big and slightly smaller punctures, deep and sparsely arranged, areas between them with distinct reticulate microsculpture. Punctures on pronotum of the same size as the smaller ones on head, deep, sparsely arranged, areas with distinct reticulate microsculpture. Punctures on elytra big and arranged very closely, areas with a few very fine, irregular dashes.

Anterior margin of pronotum straight. Anterior angles faintly rounded, slightly produced anteriorly. Posterior angles quite broadly rounded. Lateral margins of pronotum markedly reflexed in posterior half. Humeral tubercles big, produced, situated closer to anterior margin than to lateral ones. Elytral surface below humeral tubercles slightly concave. Margins of elytra distinctly and broadly ridged. Arch of femoral line reaching almost to posterior margin and terminating there. Last sternite in male (Fig. 813) with apices long, and

http://rcin.org.pl

posterior margin faintly notched. Last sternite in female (Fig. 814) with long apices and posterior margin arcuate. Spiculum gastrale 1.75 mm long.

Length 8–9 mm.

Male genitalia as in Figs. 815–816. Penis as long as parameres, in lateral view quite narrow at apex extending into a short, slightly reflexed point, when viewed from below wide, the greatest width at two-thirds from base. Penis 1.25 mm long, 0.25 mm wide in lateral view, 0.5 wide in ventral view. Siphon (Fig. 817) strongly curved, massive, apex lobate (Fig. 818).

Female genitalia. Genital plates (Fig. 819) strongly notched, base wide, divided. Sexual calli very big, pubescence very poor. Genital plate 0.75 mm long, 0.37 mm wide. Receptaculum seminis (Fig. 820) curved almost circularly, narrow, nodulus small. Infundibulum as in Fig. 821.

The species is similar to *A. halonis* Lew. occurring in Japan and Sakhalin, but one of the differentiating characters is the puncturation – double in *A. halonis* and single in *A. ocellata*.

Found in Mongolia in various habitats. In Europa the species lives mainly on coniferous trees.

Halyzia Muls.

Body fairly big, faintly convex. Colouration usually light with a lighter pattern. Head entirely hidden under pronotum. Antennae long. Elytra with a very wide lateral reflexion. Epipleurae of elytra evenly broad, slightly narrowing towards elytral apex where they are somewhat truncate. Prosternal process without costae. Anterior margin of mesosternum ridged along its entire width. Femoral line faintly indicated.

Numerous species from this genus occur mainly in Asia. The only species recorded so far in Mongolia is the same as that in Europe.

Halyzia sedecimguttata (L.)

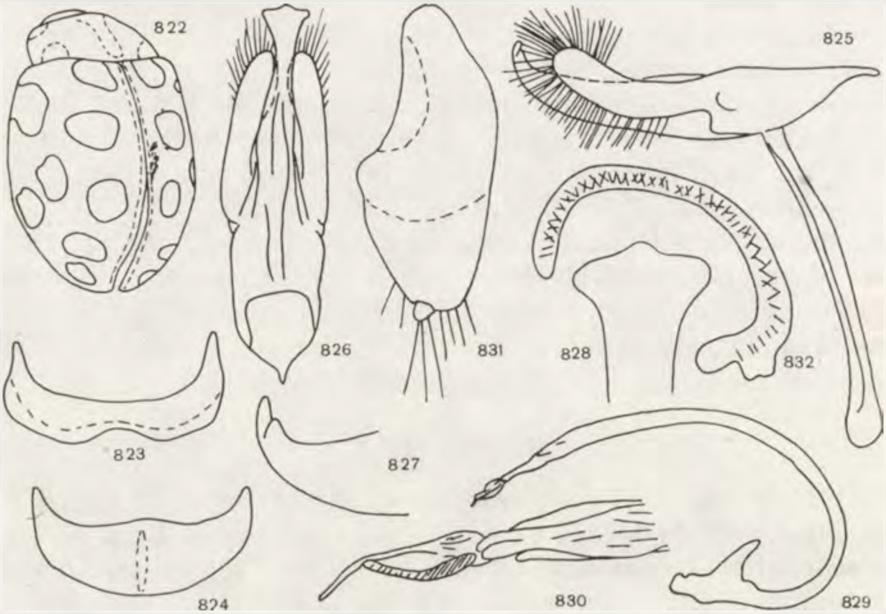
The species is distributed very widely and it occurs from Europe to Japan.

Body in the form of a broad oval, slightly depressed. Head whitish-yellow. Pronotum testaceous with indistinct light yellow spots – two on each side and one oblong spot in the middle. Scutellum testaceous. Elytra orange-yellow with lighter lateral margins and with 8 whitish-creamy spots on each (Fig. 822). Sometimes the spots are not marked very clearly and their outlines blend into the ground-colour. Underside of body and legs light orange, meso- and metasternal epimera white.

Punctures on head big, deep, closely arranged, areas with distinct, deep, reticulate microsculpture. Punctures on pronotum quite big but sparsely arranged, areas with well-marked microsculpture in the form of irregular, transversely arranged and interconnected dashes. Punctures on elytra very big and arranged very closely, areas with irregular fine dashes.

http://rcin.org.pl

Anterior margin of pronotum strongly notched arcuately. Anterior and posterior angles rounded very broadly. Lateral margin arcuate unevenly so that the greatest width is in the posterior half. Sides of pronotum reflexed very broadly, surface in anterior and posterior angles somewhat concave. Humeral tubercles very large and strongly produced, situated at humeral angles. Lateral



Figs. 822–832. *Halyzia sedecimguttata* (L.). 822 – outline an d pattern of body; 823 – last sternite of male; 824 – last sternite of female; 825–826 – male genitalia; 827 – apex of penis, lateral view; 828 – apex of penis, ventral view; 829 – siphon; 830 – apex of siphon; 831 – genital plate; 832 – receptaculum seminis.

reflexion of elytra reaching to apex. Femoral line very short, reaching to a little beyond mid-length of the segment and terminating there. Last sternite in male (Fig. 823) with long apices and a strongly notched posterior margin. Last sternite in female (Fig. 824) very long, at mid-width very faintly sclerotized. Spiculum gastrale 1.65 mm long.

Length 5–7 mm.

Male genitalia as in Figs. 825–826. Penis at apex strongly reflexed (Fig. 827) beyond the level of parameres and it is longer than parameres. In ventral view it widens into three lobes at apex (Fig. 828). Penis 1.0 mm long, 0.25 mm wide in lateral view, 0.25 mm wide at base from below, 0.16 mm at mid-length, 0.2 mm at apex. Siphon curved not very strongly, massive, its apex as in Fig. 830.

Female genitalia. Genital plates (Fig. 831) feebly notched before base, elongate. Genital plate 0.5 mm long, 0.23 mm wide. Receptaculum seminis (Fig. 832) very narrow, curved almost semicircularly, nodulus very small.

http://rcin.org.pl

The species was collected on various plants, herbs and deciduous trees, in single specimens.

Vibidia MULS.

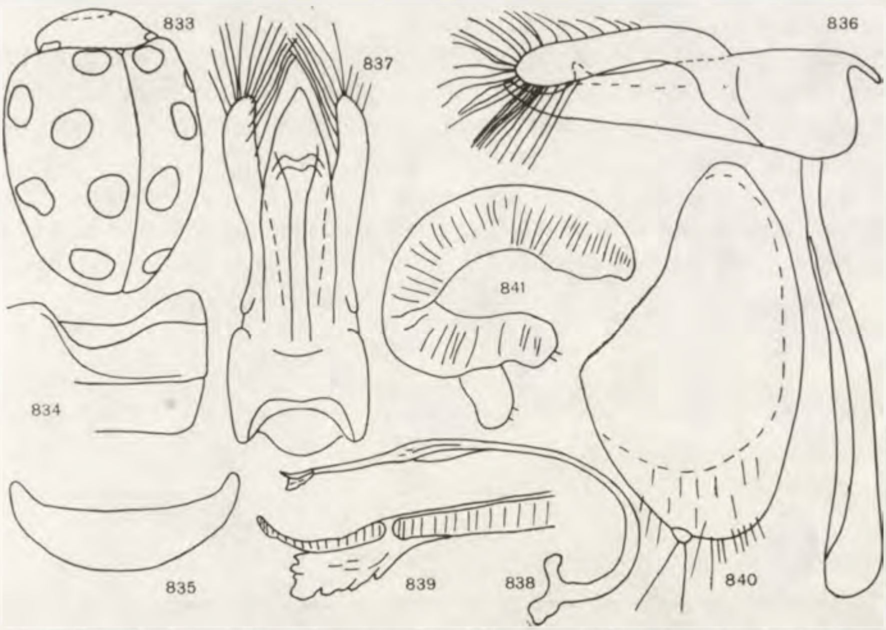
Body of medium size, colouration light with lighter spots. The greater part of head is concealed under pronotum. Antennae longer than the width of the head. Claws with a tooth at base. Prosternal processes with short costae. Femoral line incomplete.

In the Palearctic occur three species and one of these also in Mongolia, one has been recorded from Japan and one from Sakhalin. Imagines feed on some fungi and on aphids, larvae only on aphids.

Vibidia duodecimguttata (PODA)

The species occurs from Europe to Japan. From Mongolia it was recorded by MUNSTER in 1923, but it has not been reported more recently.

Body strongly convex in the shape of a very broad oval, the greatest width of the body in the anterior half. Entire body orange-brownish with white spots. On each elytron 6 spots clearly standing out from ground-colour (Fig. 833). Legs testaceous. Underside of body light brownish, occasionally slightly darkened at middle. Meso- and metasternal epimera white.



Figs. 833–841. *Vibidia duodecimguttata* (PODA). 833 — outline and pattern of body; 834 — femoral line; 835 — last sternite of male; 836–837 — male genitalia; 838 — siphon; 839 — apex of siphon; 840 — genital plate; 841 — receptaculum seminis.

http://rcin.org.pl

Punctures on head big and arranged very closely, areas with traces of very shallow and irregular microsculpture. Punctures on pronotum big, but slightly smaller than those on head, arranged unevenly yet quite closely, areas with traces of irregular microsculpture in the form of transversely arranged dashes. Puncturation on elytra consisting of very big and of slightly smaller punctures, all of them deep and arranged very closely, areas smooth.

Surface of pronotum somewhat concave near anterior and posterior angles. Anterior margin of pronotum slightly notched arcuately. Anterior and posterior angles of pronotum very broadly rounded. Lateral margins arcuate feebly and not very evenly. Sides of pronotum very broadly and distinctly reflexed. Humeral tubercles big and strongly produced, situated closer to anterior margin than to lateral one. Lateral reflexion of elytra quite wide, gradually narrowing posteriorly and terminating directly before apex of elytra. Arch of femoral line (Fig. 834) reaching almost to posterior margin and farther on running parallel to it. Last sternite in male (Fig. 835) fairly long with posterior margin evenly arcuate, apices broad and rounded. Last sternite in female long, with apices short and posterior margin somewhat inflexed at mid-width.

Length 3.8–4.8 mm.

Male genitalia as in Figs. 836–837. Penis longer than parameres, at apex curved towards parameres, with a big process before apex on side close to parameres. Penis 0.52 mm long, 0.18 mm wide in lateral view, 0.15 mm wide in ventral view. Siphon (Fig. 838) slender with basal part curved semicircularly. Apex of siphon as in Fig. 839.

Female genitalia. Genital plates (Fig. 840) wide, arranged obliquely. Sexual calli big, pubescence poor and short. Genital plate 0.36 mm long, 0.22 mm wide. Receptaculum seminis (Fig. 841) strongly reflexed with a bifurcate nodulus and numerous striae on cornu.

In external appearance the species is similar to *V. nagayami* Arak. recorded from Japan and to *Eocaria muiri* Timb. occurring in Japan and in China.

In Europe *V. duodecimguttata* lives on deciduous trees and bushes.

Thea Muls.

Species of this genus are of medium size with body lightly coloured. Both imagines and larvae feed on some fungi.

In Mongolia occurs only one species.

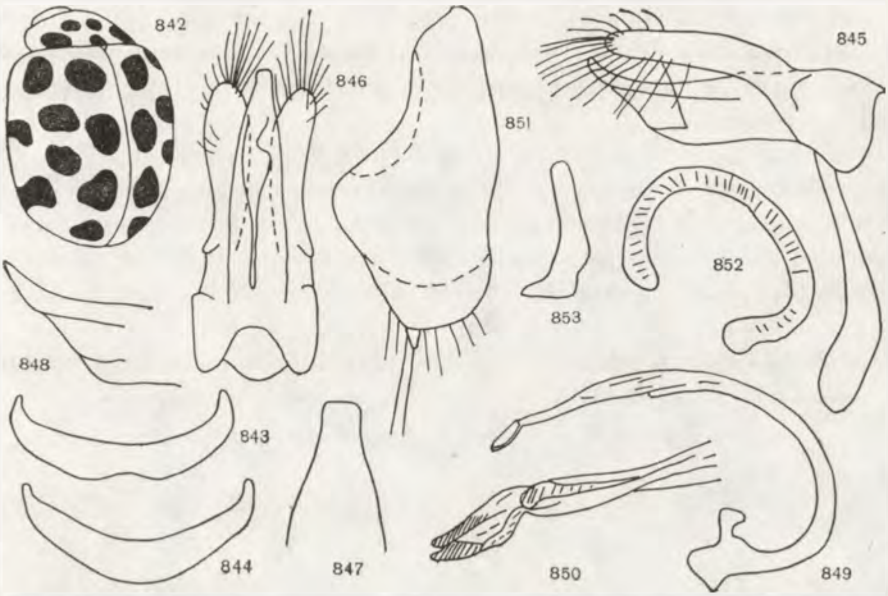
Thea vigintiduopunctata (L.)

The species is very widely distributed from Europe to eastern Asia (Korea), it has not been recorded from Japan.

Body strongly convex, of almost circular shape. Head whitish-lemon with a black base, and with clypeus having a small split black spot in male; in fe-

http://rcin.org.pl

male the spot is less split, but bigger. Pronotum lemon-coloured with 5 black spots, those situated at base reaching to posterior margin. Scutellum black. Elytra lemon-coloured with 9 black spots on each (Fig. 842). Spots situated on sides near mid-length most frequently reaching to lateral margin. Legs yellowish with femora partly darkened. Underside of body black, only mesosternal epimera, posterior part of episterna and entire metasternal epimera, white. Elytral epipleurae lemon-coloured with a black spot at their mid-length. Frequently there are light spots on the sides of the first abdominal segments.



Figs. 842–853. *Thea vigintiduopunctata* (L.). 842 – outline and pattern of body; 843 – last sternite of male; 844 – last sternite of female; 845–846 – male genitalia; 847 – apex of penis, ventral view; 848 – apex of siphon, lateral view; 849 – siphon; 850 – apex of siphon; 851 – genital plate; 852 – receptaculum seminis; 853 – infundibulum.

Punctures on head fairly big and arranged quite closely, more closely than on pronotum and on elytra. Areas between punctures smooth. Punctures on pronotum small, shallow and sparsely arranged, areas smooth and strongly shiny. Elytral puncturation double, consisting of big and small punctures arranged sparsely, areas smooth, strongly shiny.

Anterior margin of pronotum arcuate. Anterior and posterior angles broadly rounded, anterior ones slightly produced anteriorly, posterior ones protruding. Lateral margins of pronotum evenly arcuate. Sides of pronotum broadly and distinctly reflexed. Humeral tubercles on elytra very big and strongly produced, situated close to anterior margin than to lateral one. Lateral reflexion of elytra wide at front and gradually narrowing towards apex, not reaching to elytral end. Epipleurae evenly narrowing posteriorly. Arch of femoral line reaching

http://rcin.org.pl

to posterior margin and almost joining it. Last sternite in male (Fig. 843) faintly curved and faintly notched on posterior margin. Last sternite in female (Fig. 844) reflexed very strongly. Spiculum gastrale 0.7 mm long.

Length 3.5–4.8 mm.

Male genitalia as in Figs. 845–846. Penis slightly longer than parameres with apex narrowed and a little curved (Fig. 848), when viewed from below quite narrow, at apex truncate almost straight (Fig. 847). Penis 0.5 mm long, 0.15 mm wide in lateral view, 0.13 mm wide in ventral view. Siphon (Fig. 849) massive and curved quite strongly, its apex as in fig. 850.

Female genitalia. Genital plates (Fig. 851) with margins not regular, base quite wide. Genital plate 0.37 mm long, 0.18 mm wide. Receptaculum seminis (Fig. 852) narrow, strongly curved, with small nodulus. Infundibulum (Fig. 853) shoe-shaped.

Mongolian individuals differ slightly from European ones. They are slightly bigger, with bigger elytral spots and there are only 9 spots on each elytron. Small humeral spot absent, the spot at lateral margin joining the nearest one. In Mongolia the species probably forms a subspecies different than the one living in Europe, but this supposition should be confirmed by studies on a greater number of specimens from other territories.

The species lives on various herbaceous plants and on trees invaded by aleyrodids. It was collected in Mongolia in various habitats.

LITERATURE

Barovsky V. 1909. Nouvelles espèces asiatiques du genre *Lithophilus* Frh. (*Col. Cocc.*). Rus. ent. Obozr., Petersbourg, **9**: 255–261.

Barovsky V. 1922. Revisio speciarum palearcticarum Coccinellidarum generis *Exochomus* Rdtb. Ann. Mus. Zool. Ac. Sc. Russie, Petrograd, **23**: 289–303.

Barovsky V. 1926. Novyj rod semejstva *Coccinellidae*. Rev. Russe Ent., Leningrad, **20**: 69–70.

Barovsky V. 1928. Revisio specierum palaearcticarum Coccinellidarum generis *Brumus* Muls. Ann. Mus. zool. Acad. Sc. URSS, Leningrad, **28**: 194–200.

Bielawski R. 1957. Notes on some species of *Coccinellidae* and description of a new species from Tonkin (*Coleoptera*). Acta zool. crac., Kraków, **2**: 91–106.

Bielawski R. 1958. A revision of the genus *Anisosticta* Duponchel with description of a new species from Siberia (*Coleoptera, Coccinellidae*). Ann. zool., Warszawa, **17**: 91–112.

Bielawski R. 1959. Description of a new species of the genus *Anisosticta* Dup. Rev. ent. URSS, Leningrad, **38**: 851–854.

Bielawski R. 1961. A new species of ladybeetles from Mongolia. Bull. Ac. Pol. Sci., Cl. II, Varsovie, **9**: 275–278.

Bielawski R. 1964. Ergebnisse der zoologischen Forschungen von Dr. Z. Kaszab in der Mongolei. 6. *Coccinellidae* (*Coleoptera*). Folia ent. Hung., Budapest, S.n. **17**: 197–212.

Bielawski R. 1965. 50. *Coccinellidae* II. Ergebnisse der zoologischen Forschungen von Dr. Z. Kaszab in der Mongolei (*Coleoptera*). Reichenbachia, Dresden, **7**: 151–164.

http://rcin.org.pl

Bielawski R. 1968a. Ergebnisse der zoologischen Forschungen von Dr. Z. Kaszab in der Mongolei. 116. *Coleoptera: Coccinellidae* III. Ann. zool., Warszawa, **25**: 193–208.

Bielawski R. 1968b. Ergebnisse der zoologischen Forschungen von Dr. Z. Kaszab in der Mongolei. 170. *Coccinellidae* IV. Fragm. faun., Warszawa, **15**: 21–30.

Bielawski R. 1975. Ergebnisse der zoologischen Forschungen von Dr. Z. Kaszab in der Mongolei. Nr. 352. *Coccinellidae* V and VI (*Coleoptera*). Fragm. faun., Warszawa, **20**: 247–271.

Bodemyer B. 1927. Ueber meine entomologischen Reisen nach Kleinasien (1911), Ost-Sibirien, Schilka und Amur (1912), Tunis, Oasis Gafsa, Khronmerie (1913) und Iran, das Elbursgebirge (1914), Stuttgart, vol. II, 90 pp.

Brown W. J. 1962. A revision of the forms of *Coccinella* L. occurring in America north of Mexico (*Coleoptera, Coccinellidae*). Canad. Ent., Ottawa, **94**: 785–808.

Capra F. 1927. Aggiunte e correzioni al catalogus Coleopterorum regionis palaearcticae. *Endomychidae* e *Coccinellidae*. Boll. Soc. ent. It., Genova, **59**: 152–160.

Crotch G. R. 1874. A revision of the coleopterous family *Coccinellidae*. London, 311 pp.

Dobzhansky Th. 1924. Die geographische und individuelle Variabilität von *Harmonia axyridis* Pall. in ihren Wechselbeziehungen. Biol. Zentb., Leipzig, **44**: 401–421.

Dobzhansky Th. 1925. Die paläarktischen Arten der Gattung *Coccinula* Dobzh. Zool. Anz., Leipzig, **64**: 277–284.

Dobzhansky Th. 1926. Die paläarktischen Arten der Gattung *Coccinella* L. Rev. Russ. Ent., Leningrad. **20**: 16–32.

Dobzhansky Th. 1927. Neue und wenig bekannte Coccinelliden. Rev. Russ. Ent., Leningrad, **21**: 212–217.

Dobzhansky Th. 1933. Geographical variation in Lady-Beetles. Ann. Nat., Boston, **67**: 97–126.

Dodge H. R. 1938. *Coccidula suturalis* synonymy (*Col. Cocc.*). Ent. News, Philadelphia, **49**: 221–222.

Fleischer A. 1900. Neue Coccinelliden aus der Sammlung des Kais. Rathes Herrn Edmund Reitter. Wien. ent. Ztg., Wien, **19**: 116–120.

Fürsch H. 1960. Neue Coccinelliden aus dem Museum Frey. Ent. Arb. Mus. Frey, Tutzing, **11**: 298–303.

Fürsch H. 1963. Sind Änderungen der Gattungsnamen bei den Coccinelliden notwending? Nachr. bayer. Ent., München, **12**: 49–52.

Fürsch H. 1965. Die paläarktischen Arten der *Scymnus bipunctatus*-Gruppe und die europäischen Vertreter der Untergattung *Sidis* (*Col. Cocc.*). Mitt. Münchner ent. Ges., München, **55**: 178–213.

Fürsch H., Kreissl E. 1967. Revision einiger europäischer *Scymnus* (s. str.)-Arten (*Col., Cocc.*). Mitt. Abt. Zool. Landesm. Joanneum, Graz, **28**: 207–259.

Gemminger M., Harold E. 1876. Catalogus Coleopterorum. XII. Monachii, pp. 3479–3822.

Gourreau J. 1974. Systématique de la tribu des *Scymnini* (*Coccinellidae*). Paris, 221 pp.

Heyden L. 1909. *Coleoptera*, gesammelt von O. Bamberg 1908 in der Mongolei. Ent. Bl., Nürnberg, **5**: 157–161.

Jacobson G. 1916. Žuki Rosii i zapadnoj Evropy. *Coccinellidae*. Petrograd, pp. 967–991.

Kamiya H. 1959. A revision of the tribe *Chilocorini* of Japan and the Loochoos (*Col. Coccinellidae*). Kontyu, Tokyo, **27**: 99–104.

Kamiya H. 1961. A revision of the tribe *Scymninini* of Japan and the Loochoos (*Coleoptera: Coccinellidae*). J. Fac. Agr. Kyushu Univ., **11**: 275–332.

Kapur A. P. 1948. The genus *Tetrabrachys* (*Lithophilus*) with notes on its biology and a key to the species (*Col. Coccin.*). Trans. R. ent. Soc., London, **99**: 319–339.

Kaszab Z. 1963. Ergebnisse der zoologischen Forschungen von Dr. Z. Kaszab in der Mongolei. 2. Liste der Fundorten. Fol. ent. hung., Budapest, **16**: 285–307.

http://rcin.org.pl

KASZAB Z. 1965a. Ergebnisse der zoologischen Forschungen von Dr. Z. KASZAB in der Mongolei. 25. Liste der Fundorte der II. Expedition. Fol. ent. hung., Budapest, **18** (2): 5–35.

KASZAB Z. 1965b. Ergebnisse der zoologischen Forschungen von Dr. Z. KASZAB in der Mongolei. 66. Liste der Fundorte der III. Expedition. Fol. ent. hung., Budapest, **18**: 587–623.

KASZAB Z. 1966. Ergebnisse der zoologischen Forschungen von Dr. Z. KASZAB in der Mongolei. 107. Liste der Fundorte der IV. Expedition. Fol. ent. hung., Budapest, **19**: 569–620.

KASZAB Z. 1968a. Ergebnisse der zoologischen Forschungen von Dr. Z. KASZAB in der Mongolei. 152. Liste der Fundorte der V. Expedition. Fol. ent. hung., Budapest, **21**: 1–44.

KASZAB Z. 1968b. Ergebnisse der zoologischen Forschungen von Dr. Z. KASZAB in der Mongolei. 186. Liste der Funorte der VI. Expedition. Fol. ent. hung., Budapest, **21** (Suppl.): 389–444.

KLIMASZEWSKI S. M. 1963. Blattflöhe (*Homoptera, Psyllidae*) aus der Mongolei. Ann. Zool., Warszawa, **21** (8): 61–79.

KORSCHEFSKY R. 1931. *Coccinellidae* I. In: JUNK W., Coleopterorum Catalogus, **118**. Berlin, pp. 1–224.

KORSCHEFSKY R. 1932. *Coccinellidae* II. In: JUNK W.: Coleopterorum Catalogus, **120**. Berlin, pp. 225–659.

KOSTROWICKI A. S. 1965. The relations between local *Lepidoptera*-faunas as the basis of the zoogeographical regionalization of the Palaearctic. Acta zool. crac., Kraków, **10** (7): 515–583.

MADER L. 1928 (1926–1937). Evidenz der paläarktischen Coccinelliden und ihrer Aberrationen. Teil I. Wien, pp. 70–71.

MADER L. 1929 (1926–1937). Evidenz der paläarktischen Coccinelliden und ihrer Aberrationen. Teil I. Wien, pp. 91–92.

MADER L. 1930. (1926–1937). Evidenz der paläarktischen Coccinelliden und ihrer Aberrationen. Teil I. Wien, pp. 145–152.

MADER L. 1931 (1926–1937). Evidenz der paläarktischen Coccinelliden und ihrer Aberrationen. Teil I. Wien, pp. 187–188.

MADER L. 1932 (1926–1937). Evidenz der paläarktischen Coccinelliden und ihrer Aberrationen. Teil I. Wien, pp. 213–228.

MADER L. 1935 (1926–1937). Evidenz der paläarktischen Coccinelliden und ihrer Aberrationen. Teil I. Wien, p. 371.

MADER L. 1949. Beitrag zur Kenntnis der Gattung *Pharoscymnus* BEDEL (*Col. Coccinellidae*). Bull. Soc. Fouad Ier Ent., Paris **33**: 19–26.

MADER L. 1955. Evidenz der paläarktischen Coccinelliden und ihrer Aberrationen. Teil II. Arb. Mus. Frey, Tutzing, **6**: 764–1035.

MROCZKOWSKI M. 1968. Distribution of the *Dermestidae* (*Coleoptera*) of the World with a Catalogue of all known Species. Ann. zool., Warszawa, **26**: 15–191.

MULSANT E. 1866. Monographie des Coccinellides. I Partie – Coccinelliens. Paris, 292 pp.

MUNSTER T. 1923. Insecta, ex Sibiria meridionali et Mongolia in itinere Orjan OLSEN 1914 collecta. A. *Coleoptera*, VI. *Coccinellidae*. Norsk ent. Tidskr., Kristiania, **1**: 241–243.

REITTER E. 1897. Fünfzehnter Beitrag zur Coleopteren-Fauna des Russischen Reiches. Wien. ent. Zt., Wien, **16**: 121–127.

RUŽIČKA A. 1942. Übersicht der palaearktischen Arten und Formen des Genus *Coccinella* L. Folia ent., Brno, **5**: 46–68.

RYBAKOV G. 1889. Insecta in Itinere Cl. N. PRZEWALSKI in Asia Centralis novissime lecta. XIV. *Chrysomelidae* et *Coccinellidae*. Horae Soc. ent. ross., Petersburg, **23**: 286–290.

SAHLBERG J. 1914. *Scymnus triangularis* en ny finish coleopter-art. Medd. Soc. Faun. Flora Fenn., Helsingfors, **40**: 39–41.

http://rcin.org.pl

SASAJI H. 1971. Fauna Japonica, *Coccinellidae*. Tokyo, 340 pp.
SEMENOV-TIAN-SHANSKIJ A. 1936. Les limites et les subdivisions zoogéographiques de la region paléarctique pour les animaux terrestres, basée sur la distribution géographique des insectes coléoptères. Trav. Inst. zool. Acad. Sci. U.R.S.S., Leningrad, **2**: 397–410.
SOLSKY S. 1872. Coléoptères de la Sibérie Orientale. Horae Soc. ent. Rossicae, Petersbourg, **8**: 232–277.
WEISE J. 1897. Beiträge zur Käferfauna von Japan. Dtsch. ent. Z., Berlin. **23**: 147–152.
WEISE J. 1889. *Insecta*, a Cl. G. N. POTANIN in China et in Mongolia novissime lecta. IX. *Chrysomelidae* et *Coccinellidae*. Horae Soc. ent. Ross., Petersbourg, **24**: 476–492.
WEISE J. 1892. *Coccinellidae* d'Europe et du Nord de l'Asie. L'Abeille, Paris, **38**: 1–84.
WEISE J. 1900. Synonimische Bemerkungen. D. ent. Zeit., Berlin, p. 384.
WEISE J. 1929. Westindische Chrysomeliden und Coccinelliden. Zool. Jhrb., Jena, Suppl. **16**: 11–34.
WINKLER A. 1927. Catalogus Coleopterorum regionis palaearcticae. Wien. 1698 pp.
ZASLAVSKIJ V. A. 1962. New Palaearctic species of *Chilocorus* (*Coleoptera, Coccinellidae*). Ent. Obozr., Moscow, **41**: 398–401.

Miejski Ogród Zoologiczny
ul. Wróblewskiego 1
51-618 Wrocław

STRESZCZENIE

[Tytuł: *Coccinellidae* (*Coleoptera*) Mongolii]

Autor omawia wszystkie gatunki biedronek znane dotychczas z Mongolii i stwierdza występowanie tam 86 gatunków. Podany jest pełen wykaz gatunków, piśmiennictwo i klucze do oznaczania. Wszystkie gatunki są zilustrowane ważniejszymi szczegółami morfologicznymi.

Omawiając wystepowanie *Coccinellidae* w Mongolii, autor wyróżnia cztery krainy zoogeograficzne: I — orechońsko-selengo-kobdyjską, II — changajską, III — kerulеńską, IV — ałtajsko-gobijską.

Przy analizie zoogeograficznej autor, w oparciu o współczynniki podobieństwa i współczynniki pokrewieństwa poszczególnych faun różnych obszarów Palearktyki wnioskuje, że fauna biedronek Mongolii jest bardzo silnie powiązana z faunami obszarów leżących na zachód od Mongolii. Tak, na przykład, fauna *Coccinellidae* Mongolii jest bardziej zbliżona do fauny biedronek Polski, aniżeli fauny Półwyspu Koreańskiego.

---

http://rcin.org.pl

РЕЗЮМЕ

[Заглавие: *Coccinellidae* (*Coleoptera*) *Монголии*]

Автор обсуждает все известные до настоящего времени из Монголии *Coccinellidae* и констатирует там 86 видов. Приведен полный список видов, литература и определители. Все виды сопровождаются рисунками, подчеркивающими наиболее существенные особенности морфологического строения.

Анализируя распространение *Coccinellidae* в Монголии, автор выделяет четыре зоогеографических района: I — Орхонско-селенгийско-кобдоский, II — Хангайский, III — Керуленский, IV — Алтайско-гобийский. Анализируя показатели сходства и показатели родства отдельных фаун из разных районов Палеарктики автор приходит к выводу, что фауна *Coccinellidae* Монголии более тесно связана с фаунами территорий, лежащих к западу от Монголии. Она более близка, например, фауне *Coccinellidae* Польши, чем полуострова Корея.

Redaktor pracy — prof. dr J. Nast

http://rcin.org.pl